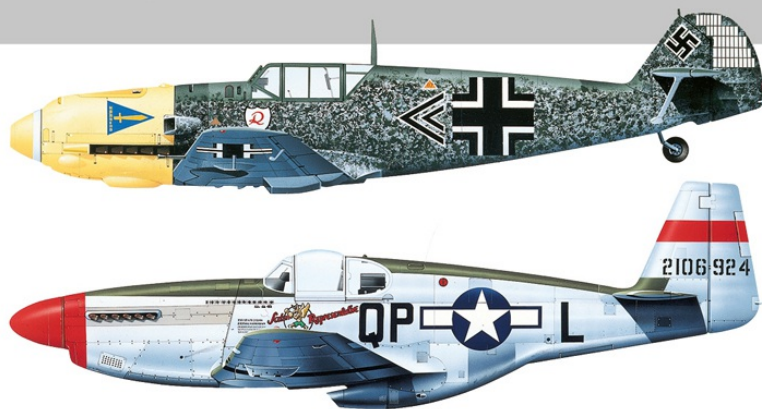


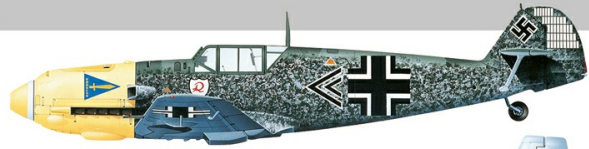


WORLD WAR II FIGHTER PLANES

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Tony Holmes

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AVIA B 534

SPECIFICATIONS (B 534-IV)

Crew: Pilot

Length: 26ft 7in (8.1m)

Wingspan: 30ft 10in (9.4m)

Height: 10ft 4in (3.15m)

Empty: 3,219lb (1,460kg)

Max T/O: 4,365lb (1,980kg)

Max speed: 252mph (405km/h)

Range: 370 miles (600km)

Powerplant: Hispano-Suiza 12Ydrs

Output: 849hp (633kW)

Armament: Four 7.92mm machine guns in fuselage; six 22lb (10kg) or four 44lb (20kg) bombs under wings

First Flight Date: 25 May 1933



B 534 (M-4) of catnik Jozef Stauder, No 13 Sqn, Tulczyn, Ukraine, summer 1941

Up until 1942, the B 534 was the standard equipment of Slovakian fighter units. This particular aircraft displays the Slovakian Air Arms (*Slovenske vzdušne zbrane*) camouflage scheme, with the

wing upper surfaces and fuselage sides in khaki overall, and the wing and fuselage undersurfaces in light blue. The aircraft also has the yellow markings displayed by all Axis aircraft on the Eastern Front. 'Jozo' Stauder did not score any victories with the B 534, gaining all 12 of his kills in Bf 109s in 1943.

The B 534 biplane evolved from the limited-production B 34 of 1932 and became the most successful Czechoslovakian fighter design of the interwar period. Both aircraft were the work of Avia's gifted aeronautical engineer František Novotný, who trialled several different engines in slightly modified B 34 airframes before settling on the license-built Hispano-Suiza 12Ydrs V12. The resulting single-bay biplane prototype completed its maiden flight on 25 May 1933, and the aircraft was ordered into series production for the Czechoslovak Air Force shortly thereafter. Despite its increasing obsolescence, the B 534 would be built by Avia through to 1939, by which time 568 aircraft had been completed in five variants.

The B 534-I, with guns mounted in the wings and on the fuselage, was the first to enter service in October 1935. The follow-on B 534-II had all four guns mounted in blisters on either side of the fuselage, and some examples also had a bubble canopy. The B 534-III of 1937 featured aerodynamic refinements, including mudguard spats for the fixed undercarriage and streamlining of the front carburettor air intake. The B 534-IV that quickly followed was the major production variant, with Avia completing 272 examples of the aircraft. It had various refinements that pushed the fighter's top speed to 252mph. The final variant was the Bk 534, which was supposed to be fitted with a cannon firing through the propeller hub, but Avia had to stick with an extra machine gun due to installation issues with the weapon. Only 35 Bk 534s were built.

When Germany occupied Czechoslovakia in March 1939, more than 450 B/Bk 534s were commandeered by the Luftwaffe. The aircraft were briefly used as fighters and then trainers, and three frontline squadrons of the newly formed Slovak Air Force were also equipped with the aircraft. They would see action on the Eastern Front from June 1941. The Bulgarian Air Force also received 78 B 534-IVs from German stocks, and these aircraft tried to oppose the early USAAF bombing raids on the Ploesti oilfields. Finally, Greece and Yugoslavia had been export customers for the B 534 pre-war.

FIGHTER DETAILS



B 534 No 217 (S-18) of zastavnik Frantisek Cyprich, Combined Squadron (*Kombinovana letka*), Tri Duby, central Slovakia, August–September 1944

This aircraft was one of four obsolete B 534s operated by the insurgent Combined Squadron. It was flown by former members of No 13 Sqn, including Frantisek Cyprich, who had claimed 12 Soviet aircraft shot down. Flying a B 534 during the Slovak uprising against their former German allies, 'Fero' Cyprich shot down a Hungarian Ju 52/3m transport – the last ever kill to be scored by a biplane with a fixed undercarriage. This aircraft, which displays insurgent markings, has part of its canopy missing.

BELL P-39 AIRACOBRA

SPECIFICATIONS (P-39D/N)

Crew: Pilot

Length: 30ft 2in (9.19m)

Wingspan: 34ft 0in (10.36m)

Height: 11ft 10in (3.61m)

Empty: 5,645lb (2,560kg)

Max T/O: 8,300lb (3,765kg)

Max speed: 386mph (621km/h)

Range: 650 miles (1,046km)

Powerplant: Allison V-1710-85

Output: 1,200hp (895kW)

Armament: P-39D/N – One 37mm cannon and two 0.50in machine guns in nose, two or four 0.30in machine guns in wings, one 500lb (227kg) bomb; P-39 Q – two underwing 0.50in machine guns replaced wing-mounted 0.30in guns

First Flight Date: 6 April 1938 (XP-39)

Bell's revolutionary P-39 introduced the concept of both the centrally mounted powerplant and the tricycle undercarriage to single-engined fighters, the aircraft's unusual configuration stemming from its principal armament, the propeller hub-mounted T9 37mm cannon. In order to allow the weapon to be housed in the nose, the P-39's engine was moved aft to sit virtually over the rear half of the wing centre-section. This drastically shifted the fighter's centre of gravity, thus forcing designers to adopt a tricycle undercarriage. Unfortunately, the P-39's radical design was not matched by stunning performance figures, particularly at heights exceeding 14,000ft, where its normally aspirated Allison V-1710 struggled in the 'thinner' air at these altitudes.

Astonishingly, following a service evaluation of the YP-39 in 1938–39, Bell was told by US Army Air Corps and National Advisory Committee for Aeronautics officials that a turbocharged version of the V-1710 that was

then available for the Airacobra was not needed! Once the fighter entered service in 1941 the wisdom of this decision was quickly called into question. Indeed, so compromised was the aircraft's operability in its designated role that the P-39 (and the P-400, which was an export version of the aircraft fitted with a 20mm cannon – 128 P-400s were used by the USAAF after the RAF cancelled its order) was soon relegated to close air support duties in theatres where other aircraft could be employed as fighters. Operating at much lower altitudes over the Eastern Front, the Soviet Air Force did, however, achieve great aerial success with the Bell fighter, utilizing some 5,000 from 1942 onwards.

FIGHTER DETAILS



P-400 BW102 of 1Lt Curran 'Jack' Jones, 39th FS/35th FG, Port Moresby, New Guinea, June 1942

Future five-victory ace 'Jack' Jones is known to have regularly flown this P-400 during the 35th FG's first tour of operations in mid-1942. Indeed, he may well have used it to claim his sole Airacobra kill (a Zero-sen) on the morning of 9 June. Like most other P-400s from the 39th FS, BW102 was transferred to the 80th FS in July 1942.



P-39N-0 42-9004 of Col Aleksandr Ivanovich Pokryshkin, 9th GIAD, Germany, spring 1945

Three-time Hero of the Soviet Union (HSU) Col Aleksandr Pokryshkin, with 59 officially credited individual victories (55 of which are marked with red stars on the nose of this aircraft), was the second-ranking Allied ace of World War II. While 'Bort 100' seems to have been the number used by commanders of several different regiments and divisions for their assigned fighters, Pokryshkin had always marked his machines in such a way from his first days in action in 1941.

BELL P-63 KINGCOBRA

SPECIFICATIONS (P-63C)

Crew: Pilot

Length: 32ft 8in (9.96m)

Wingspan: 38ft 4in (11.68m)

Height: 12ft 7in (3.84m)

Empty: 6,375lb (2,892kg)

Max T/O: 10,500lb (4,763kg)

Max Speed: 410mph (660km/h)

Range: 2,200 miles (3,540km) with external fuel tanks

Powerplant: Allison V-1710-93

Output: 1,325hp (988kW)

Armament: One 37mm cannon and two 0.50in machine guns in nose; two underwing 0.50in machine guns; up to three 500lb (227kg) bombs

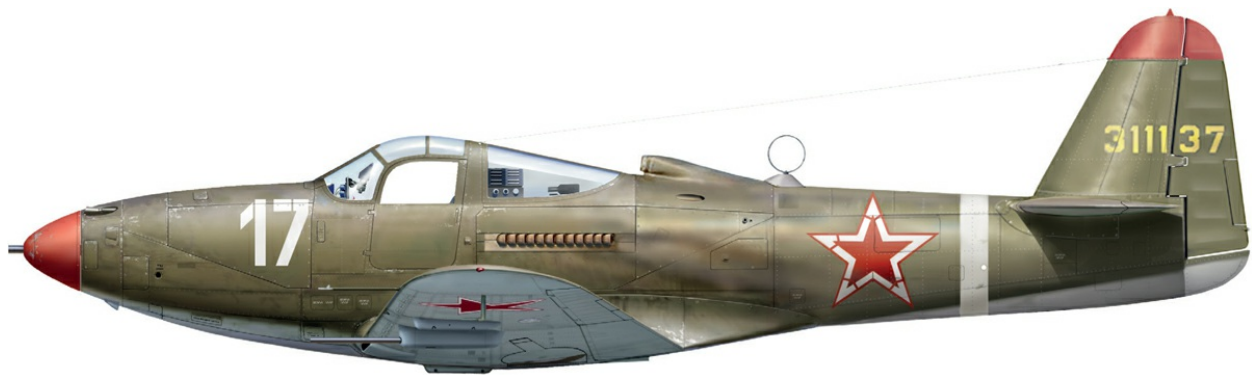
First Flight Date: 7 December 1942

Although the P-63 looked like an enlarged Airacobra, it was in fact an all-new design that had a superior turn of speed at all altitudes. The fighter drew heavily on modifications incorporated into the P-39's original replacement, the cancelled XP-39E. However, unlike the latter aircraft, the P-63 was more than just an Airacobra fuselage with new semilaminar flow wings. The Kingcobra, as it was appropriately named, was appreciably larger and featured an Allison V-1710-93 engine (P-63A) that could be boosted to 1,500hp in flight in the event of an emergency.

Although 3,300 examples were built in several different versions, by the time the first production P-63s began to reach the USAAF in October 1943, the P-51B Mustang, P-38H Lightning and P-47C Thunderbolt had successfully filled the USAAF's requirement for a frontline fighter. Most P-63s were therefore made available for lend-lease purchase, and the Soviet Air Force happily snapped up more than 2,400 examples.

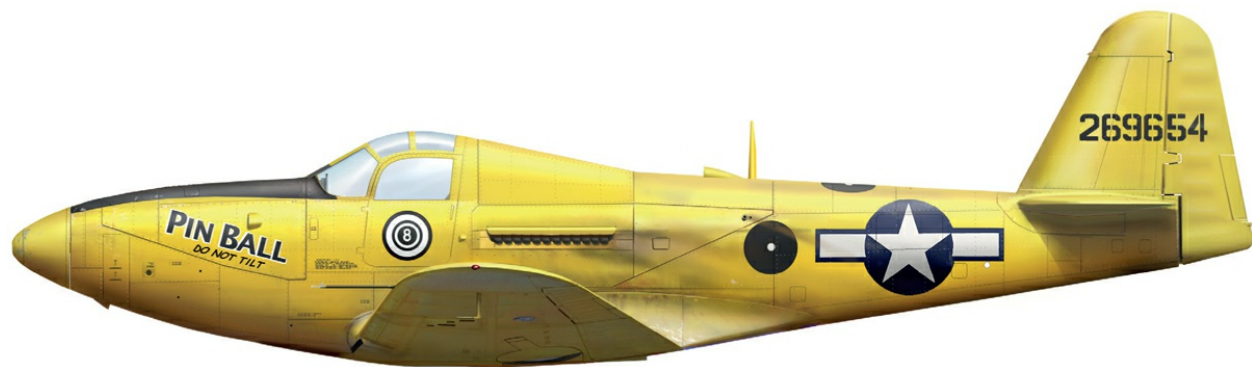
A further 300 went to Free French units in the Mediterranean, but the primary customer – the USAAF – restricted its use of the Kingcobra to training squadrons in America. The final variant in production at war's end was the P-63E, of which only 13 from an order for 2,930 had been delivered when the contract was cancelled in the wake of VJ Day.

FIGHTER DETAILS



P-63C-5 43-11137, 689th GIAP, USSR, 1946

43-11137 was one of 2,421 Kingcobras supplied to the Soviet Union from June 1944, these aircraft being the last US fighters provided to the USSR in World War II. Only a handful of P-63s had made it to the frontline by the spring of 1945, and none were used in combat, as the units they were assigned to were fully occupied flying ground support missions during the Battle of Berlin.



RP-63A-11 42-69654, 2126th Base Unit, Laredo, Texas, 1945

One of more than 300 surplus P-63s converted into aerial 'targets' for the training of USAAF bomber gunners, 42-69654 was fitted with thickened cockpit glass and strengthened wings and forward fuselage panels armoured with special aluminium alloy. The Kingcobras of the 'Pinball'

programme were all set to be widely used by Army Air Forces Training Command when VJ Day put a halt to the conversions. A few trained B-29 gunners post-war, but all RP-63s had been mothballed by the end of 1947.

BELL P-59 AIRACOMET

SPECIFICATIONS (P-59A)

Crew: Pilot

Length: 38ft 10in {11.83m}

Wingspan: 45ft 6in {13.97m}

Height: 12ft 4in {3.76m}

Empty: 8,165lb {3,704kg}

Max T/O: 13,700lb {6,214kg}

Max Speed: 413mph {665km/h}

Range: 525 miles {845km}

Powerplant: two General Electric J31-GE-3/5 turbojets

Output: 4,000lb st {18.0kN}

Armament: One 37mm cannon and three 0.50in machine guns in nose; two underwing racks for bombs or drop tanks

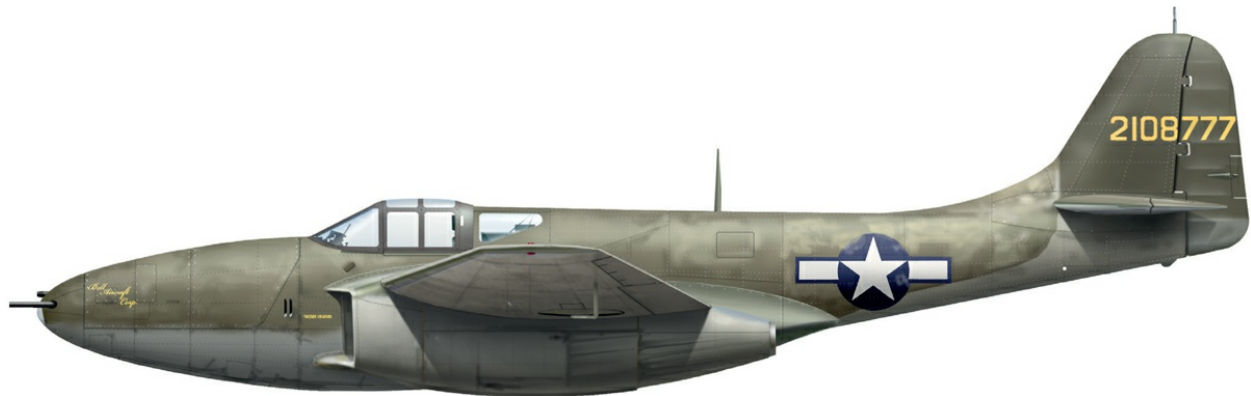
First Flight Date: 1 October 1942

America's first jet fighter, the Bell P-59 was built around the revolutionary Whittle turbojet that had been unveiled to the US government by Britain in September 1941. Of conventional design, and with a straight wing, the Bell fighter was powered by two Americanized General Electric Type IAs (subsequently redesignated J31). Flight development went smoothly, with three prototypes (XP-59A) and 13 evaluation airframes (YP-59A) being delivered by late 1944.

It was soon realized at an early stage of the flight development programme that the Airacomet's performance was in fact inferior to many frontline piston-engined fighters of the day. This consigned the 66 production aircraft that were subsequently built by Bell to the fighter trainer role. The first of 20 production P-59As was delivered to the USAAF in August 1944, and three of these aircraft were duly supplied to the US Navy as the XF2L-1. The P-59B replaced the A-model soon after, and a further 30 were delivered before the remaining 50 on order (plus

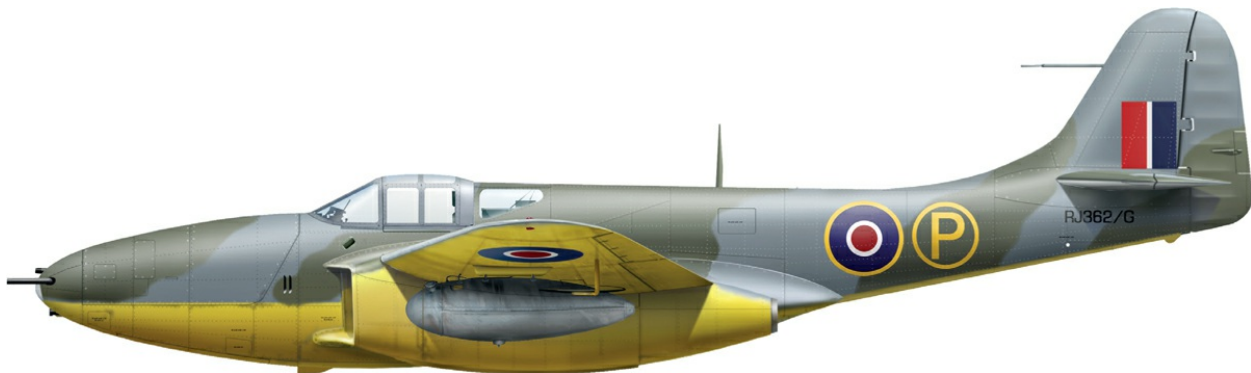
an expected follow-on batch of a further 250) were cancelled in October 1944.

FIGHTER DETAILS



YP-59A 42-108777, Muroc Army Airfield, California, 1944

YP-59A 42-108777, adorned with the titling *Bell Aircraft Corp* on its nose, was the last of seven aircraft built as part of Contract AC 21931 SA1 (42-108771 through -108777) placed on 26 March 1942. 42-108777 was acquired post-war by the Planes of Fame Air Museum of Chino, California, and it is presently undergoing a long-running restoration to airworthiness.



YP-59A RJ362/G, Royal Aircraft Establishment, Farnborough, Hampshire, December 1943

Built as YP-59A 42-108773, this aircraft was exchanged with the RAF for the first production Gloster Meteor F I EE210. The Airacomet arrived in Britain in September 1943 and was given the serial RJ362/G, with the 'G' indicating that the aircraft needed to be guarded at all times when it was on the ground away from its home at the Engine Research Flight at Farnborough. It was shipped back to the USA in early 1945 and sold for scrapping shortly thereafter.

BLOCH MB.152

SPECIFICATIONS (BLOCH MB.152C-1)

Crew: Pilot

Length: 29ft 10in (9.10m)

Wingspan: 34ft 7in (10.54m)

Height: 9ft 11in (3.02m)

Empty: 4,758lb (2,158kg)

Max T/O: 6,173lb (2,800kg)

Max Speed: 320mph (515km/h)

Range: 525 miles (845km)

Powerplant: Gnome-Rhône GR 14N-25

Output: 1,080hp (806kW)

Armament: Two 20mm cannon and two 7.5mm machine guns in nose, or four 7.5mm machine guns in wings

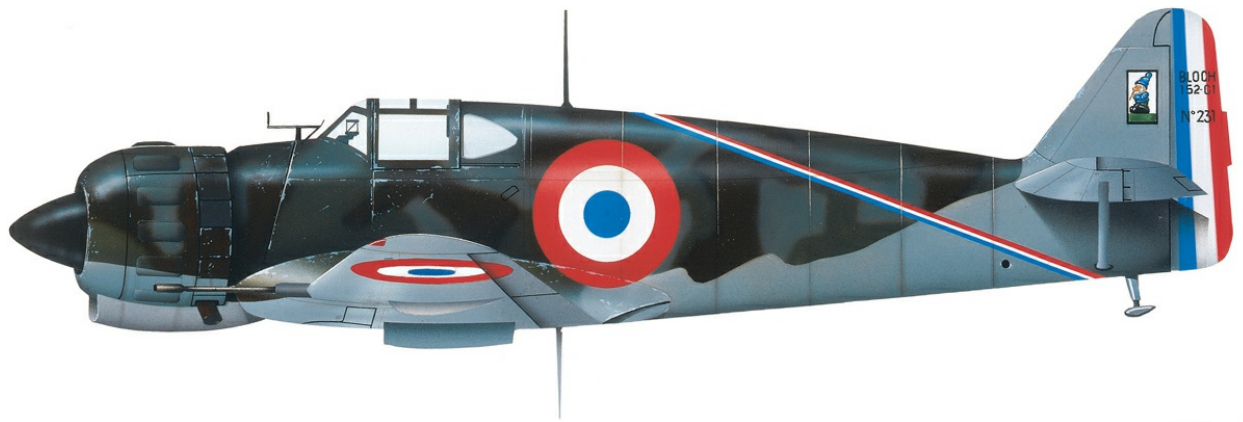
First Flight Date: 15 December 1938

The most populous member of the French Bloch MB.150 family of single-seat fighters developed in the second half of the 1930s, the MB.152 combined the proven all-metal structure of the very similar MB.151 (of which 144 were built) with the latest version of Gnome-Rhône's tried and tested 14N radial engine – the latter, oddly, was canted slightly to port. Better armament was also fitted to the new Bloch fighter, and the first of 482 built for the *Armée de l'Air* entered service in April 1939. Subsequent deliveries proved to be slow, however, and those in the frontline suffered from poor serviceability.

Nevertheless, no fewer than nine fighter groups possessed MB.152s at the time of the German invasion of France on 10 May 1940, and although the fighter suffered heavy attrition (86 were lost in action), MB.152 pilots were credited with the destruction of 146 Luftwaffe aircraft prior to France's capitulation on 30 June 1940. The aircraft continued to see service with six fighter groups of the Vichy French for a further two years, and small numbers also flew with the Luftwaffe as advanced

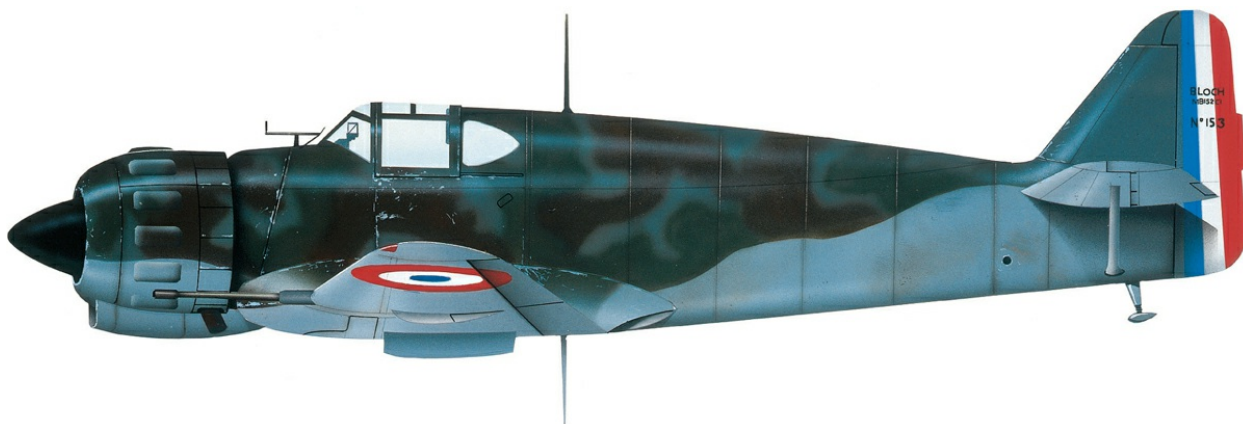
trainers and with the Romanian Air Force. The Greek Air Force was the sole export customer for the MB.151, and it had received nine of the 25 examples it had ordered when the French capitulation to Germany in June 1940 put a stop to further deliveries. These aircraft scored several aerial victories over the Luftwaffe prior to being shot down on 19 April 1941.

FIGHTER DETAILS



MB.152C-1 No 231 of Cne Marius Ambrogi, *Groupe de Chasse* I/8, Claye-Souilly, France, June 1940

This aircraft was flown by 15-victory World War I ace Cne Marius Ambrogi and wore a tricolour band on the fuselage to denote his ace status. Ambrogi downed a Do 17 bomber during the Battle of France. The emblem on the tail of the aircraft is 'Dopey', one of Disney's Seven Dwarfs.



MB.152C-1 No 153 of Sous Lt Robert Thollon, *Groupe de Chasse* I/8, Claye-Souilly, France, June 1940

The camouflage and markings that adorn this aircraft are typical of the dull colours applied to the

majority of MB.152s in 1940. Sous Lt Robert Thollon claimed all eight of his victories during the Battle of France, and following the Armistice with Germany, he spent the rest of the war as an instructor at a mountain sports training school. He also worked closely with the resistance movement. Thollon was killed in a mountain-climbing accident in 1948.

BOULTON PAUL DEFIANT

SPECIFICATIONS (DEFIANT I)

Crew: Pilot and turret gunner

Length: 35ft 4in (10.77m)

Wingspan: 39ft 4in (12.00m)

Height: 12ft 2in (3.70m)

Empty: 6,078lb (2,757kg)

Max T/O: 8,318lb (3,773kg)

Max Speed: 304mph (489km/h)

Range: 465 miles (748km)

Powerplant: Rolls-Royce Merlin III

Output: 1,030hp (768kW)

Armament: Four 0.303in machine guns in dorsal turret

First Flight Date: 11 August 1937

The final result of the turret fighter concept favoured by the RAF in the 1930s, the Defiant enjoyed a less than successful career as a frontline fighter in the dangerous skies over southern England during the summer of 1940. Built to combine the strengths of new monoplane fighter designs such as the Hurricane and Spitfire with the latest in turret weaponry, the Defiant was seen as an effective bomber destroyer. However, once in action, the aircraft struggled against single-seat opposition, both in terms of speed and agility, due to the weight of its two-man crew and bulky armament.

Entering squadron service in December 1939, the Defiant initially enjoyed some success against Luftwaffe opposition surprised by its turret armament. However, once Bf 109 pilots in particular learned that the aircraft had no forward-firing guns, they tailored their tactics accordingly and inflicted heavy losses on the Defiant units off the Dunkirk evacuation beaches and during the early stages of the Battle of Britain. Removed from daylight operations by late August 1940,

surviving Defiant Is and new Mk IIs eventually equipped 13 newly formed nightfighter squadrons, and between the autumn of 1940 and early 1942, the aircraft enjoyed some nocturnal success.

FIGHTER DETAILS



Defiant I L7013/PS-U of Plt Off E G Barwell, No 264 Sqn, Fowlmere, Cambridgeshire, July 1940

This aircraft flew from Duxford's satellite airfield at Fowlmere with No 264 Sqn during the early stages of the Battle of Britain. The following month the unit moved to Hornchurch, Essex, and when flying from here on 24 August L7013 was attacked by two Bf 109s and hit behind the turret by an explosive shell. Its pilot, Flt Lt E W Campbell-Colquhoun, managed to shake off his attackers and land at Manston, Kent. After being repaired, L7013 was relegated to training duties.



Defiant I N3328/DZ-Z of Sgt HE Bodien in the nightfighter role, No 151 Sqn, Wittering, Cambridgeshire, February 1941

N3328 was first flown by future ace Henry Bodien at the end of February 1941. The fighter was also routinely taken aloft by WO James Hopewell, who had become an ace flying Spitfires the previous summer. Like many other Defiants, N3328 (which was adorned with a very distinctive marking in the form of a sharkmouth, the origin of which remains unknown) later served in a training role. The fighter was written off in a crash in Yorkshire in October 1942.

BREWSTER F2A BUFFALO

SPECIFICATIONS (F2A-2/3)

Crew: Pilot

Length: 26ft 4in (8.03m)

Wingspan: 35ft 0in (10.67m)

Height: 12ft 1in (3.68m)

Empty: 4,732lb (2,146kg)

Max T/O: 7,159lb (3,247kg)

Max Speed: 321mph (516km/h)

Range: 965 miles (1,553km)

Powerplant: Wright R-1820-40

Output: 1,200hp (895kW)

Armament: Four 0.303in machine guns, two in the nose and one in each wing

First Flight Date: December 1937

The first monoplane fighter to enter service with the US Navy, the F2A was designed for use aboard aircraft carriers. The first aircraft delivered by Brewster were 11 Wright Cyclone-powered F2A-1s, which were taken on strength in June 1939. Part of an order for 54 such aircraft, the remaining 43 Buffalos were instead supplied to the Finnish Air Force as the Model B-239. The follow-on F2A-2 and -3 proved more popular with the US Navy, as they featured the definitive Wright 1820-40 radial engine and armour protection for the pilot.

Although only 509 examples were built in total between 1938 and 1941, the F2A-2/3 enjoyed a modicum of export success when it was ordered as the B-339B/D/Es by the Belgian, Dutch and British governments as these nations attempted to bolster their air forces on the eve of war in Europe. Despite the Model 339s and Buffalo Is (as the type was named by the RAF) acquired by the latter two countries faring badly in combat against the Japanese in 1941–42, the Model B-239s flown by the Finns exacted a heavy toll on the Soviet Air Force between 1941 and

1944. No fewer than 37 Finnish pilots became aces (claiming five or more aircraft shot down), resulting in the Brewster fighter being christened the 'Pearl of the Skies' by those that flew it.

FIGHTER DETAILS



Buffalo I W8245/RD-D of Sgt G A Williams, No 67 Sqn, Mingaladon, Burma, 23 December 1941

When the first Japanese air raid on Rangoon occurred on 23 December 1941, New Zealander Sgt Gordon 'Willie' Williams was already on patrol in this aircraft. Diving on a formation of Ki-21 'Sally' heavy bombers, he downed one of them, probably destroyed another and damaged four more. Like Williams (who later flew Hurricanes with No 67 Sqn and made ten claims in total, including 3.5 destroyed), W8245 survived the Burma debacle and was evacuated to India to be used as a fighter trainer.



Model 239 BW-370/'Black 4' of 1Lt Aulis Lumme, 2/LeLv 24, Suulajärvi, Finland, May 1943

1Lt Aulis Lumme was posted to 4/LLv 24 shortly after the start of the Continuation War in June

1941, and he 'made ace' on 22 November 1942 in BW-370. On 15 February 1943 the LLv 24's 4th Flight was redesignated 2/LeLv 24, and Lumme was its commanding officer between May and September 1943. He finished the war with 16.5 victories, 4.5 of them in BW-370. The osprey with a fish in its talons on the fin was the emblem of 2/LeLv 24.

BRISTOL BLENHEIM

SPECIFICATIONS (BLENHEIM IF)

Crew: Pilot, navigator and gunner

Length: 39ft 7in (12.12m)

Wingspan: 56ft 4in (17.17m)

Height: 9ft 10in (3.00m)

Empty: 8,818lb (4,000kg)

Max T/O: 12,200lb (5,534kg)

Max Speed: 278mph (447km/h)

Range: 1,700miles (2,736km)

Powerplant: two Bristol Mercury VIII engines

Output: 1,680hp (1,253kW)

Armament: Four 0.303in machine guns in an underfuselage pack and one 0.303in gun in a powered dorsal turret

First Flight Date: 12 April 1935 (Blenheim I)

Bristol's venerable Blenheim was the result of a speculative private venture on the part of the manufacturers. Unencumbered by restrictions on the aircraft's weight, powerplants, general layout or radius of action, the Bristol design team produced a sleek twin-engined machine known as the Type 142. First flown at Filton on 12 April 1935, the aircraft's performance sent ripples through the RAF when it was discovered that its top speed was 30mph greater than Fighter Command's then new biplane fighter, the Gloster Gauntlet I. The Air Ministry ordered 150 airframes, which they christened the Blenheim, and the first of these entered service with the RAF in March 1937. By September 1939 most British-based Blenheim squadrons had replaced their Mk Is with the improved Mk IV, the latter having grown out of an Air Ministry requirement for a reconnaissance type with greater crew accommodation and an increased range.

By then, almost 150 surplus Blenheim Is had been converted into IF

long-range fighters as replacements for biplane Hawker Demons following trials by the Royal Aircraft Establishment with an under-fuselage gun pack containing four Browning machine guns. The first of these new 'fighters' had been delivered to Nos 23 and 25 Sqns in December 1938. Further Royal Auxiliary Air Force units would also make the switch in 1939. On the outbreak of war the RAF had no specialized nightfighter units, so the Blenheim IF fighter squadrons were allocated this additional duty. A period of intense night training commenced. Amid great secrecy, trials had been proceeding on an air intercept (AI) radar, and No 25 Sqn received its first four AI-equipped Mk IFs in August 1939. The Blenheim IF would see limited action in both roles during the early stages of the war.

Long-nose Blenheim IVs were also converted into the long-range day and nightfighter roles in 1940, with aircraft being issued to a handful of Fighter Command and Coastal Command units. These Blenheims were particularly active over the English Channel during the Battle of Britain and when the Luftwaffe commenced its night Blitz campaign.

FIGHTER DETAILS



Blenheim IF L8715/NG-R of Flg Off J Cunningham, No 604 'County of Middlesex' Sqn, North Weald, Essex, December 1939

Flg Off John Cunningham, who was to become possibly the most famous Allied nightfighter pilot of World War II, was a pre-war member of No 604 Sqn. Once mobilized he flew Blenheim Ifs with the unit, including L8715. Cunningham had commenced operational flying in December 1939, although he made no claims with the Blenheim IF. This aircraft was also regularly flown during the summer of 1940 by Plt Off Ian Joll, who was credited with at least four nocturnal victories.



Blenheim IVF L9446/NA-N of Flg Off R G Peacock, No 235 Sqn, Thorney Island, West Sussex, 18 August 1940

Flg Off Reg Peacock was the only pilot to achieve five victories flying the Blenheim fighter. He gained his first successes during North Sea patrols in May and June 1940, and by mid-summer he had two and two shared victories to his name. On 18 August, with the Battle of Britain at its height, Peacock (in L9446) intercepted almost 30 Ju 87s and downed one of them, giving him his fifth victory.

BRISTOL BEAUFIGHTER

SPECIFICATIONS (BEAUFIGHTER IF)

Crew: Pilot and navigator/gunner

Length: 41ft 4in (12.60m)

Wingspan: 57ft 10in (17.63m)

Height: 15ft 10in (4.83m)

Empty: 14,069lb (6,382kg)

Max T/O: 21,100lb (9,571kg)

Max Speed: 323mph (520km/h)

Range: 1,170 miles (1,883km)

Powerplants: two Bristol Hercules III or XI engines

Output: 2,980hp (2,088kW) or 3,180hp (2,370kW), respectively

Armament: Four 20mm cannon in nose and six 0.303in machine guns in wing

First Flight Date: 17 July 1939

Built as a private venture by Bristol to overcome the RAF's embarrassing lack of long-range heavy fighters in the late 1930s, the Leslie Frise-designed Beaufighter used the wings, tail and rear fuselage of the company's rugged Beaufort torpedo-bomber so as to expedite the aircraft's development. The 'minimum change' aircraft that was subsequently created proved to be one of the best strike and nightfighters of World War II. Featuring a new main fuselage, powerful Bristol Hercules (and, later, Rolls-Royce Merlin) engines and a mixed gun and cannon armament, the prototype Beaufighter made its first flight on 17 July 1939 – barely six months after it had been conceived by Bristol's design team.

The first examples entered RAF service in September 1940, and when subsequently fitted with radar, the Mk IF (and Merlin-powered Mk IIF) took the fight to the Luftwaffe during its nocturnal Blitz of 1940–41. Further developed into the Mk VIF in 1942, this version of the Beaufighter had air intercept radar fitted in a 'thimble' nose cone. Issued

to 14 fighter squadrons and four USAAF units in the Mediterranean, the Mk VIF remained an important nightfighter asset until replaced by the Mosquito (in RAF service) and P-61 Black Widow (with the USAAF) from mid-1944. By then, no fewer than 80 Allied pilots had 'made ace' flying the Beaufighter, predominantly in the nightfighting role.

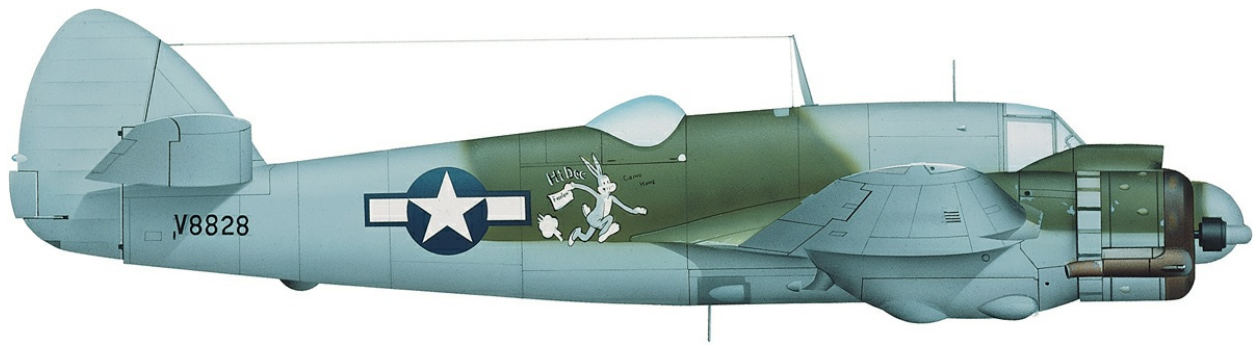
The long-range dayfighter variants also proved a staple aircraft for Coastal Command, the Mk IC, VIC and TF X seeing service off the coasts of Occupied Europe from Norway to southern France, throughout the Mediterranean and North Africa, and against the Japanese in the Far East. The TF X of 1943 was the definitive torpedo fighter variant, being capable of carrying an 18in or 22.5in weapon beneath its fuselage. A total of 5,584 Beaufighters were built between 1939 and 1946, including 365 in Australia. Indeed, the last aircraft built was an Australian Mk 21 in January 1946. Post-war, Beaufighters remained in frontline use with the RAF through to 1950, after which a large number of TF Xs were converted into TT 10 target tugs.

FIGHTER DETAILS



Beaufighter IIF T3145/KP-K of Wg Cdr P Y Davoud, No 409 Sqn RCAF, Coleby Grange, Lincolnshire, March 1942

In early 1942 T3145 was the regular aircraft of Wg Cdr Paul Y Davoud, CO of No 409 Sqn. He flew this aircraft for the first time on a night flying test on 23 February and again the following night on a ground-controlled intercept practice sortie. Davoud joined the unit following the death of the previous CO while converting to the Merlin-engined Beaufighter IIF, which could be tricky to handle. T3145 was later relegated to training duties and crashed in September 1943.



Beaufighter VIF V8828 of the 417th NFS, Corsica, early 1944

Four USAAF nightfighter squadrons were equipped with Beaufighter VIFs in the Mediterranean theatre between 1943 and 1945, these units being the last to receive the P-61 Black Widow.

V8828 *Hi Doc*, displaying a Bugs Bunny cartoon character mid-fuselage, was assigned to the 417th Night Fighter Squadron (NFS) and initially based in Algeria, before moving to Corsica as the Allies advanced. The squadron was still operating a full complement of Beaufighters when the new P-61s began arriving shortly before the war ended.

CAC BOOMERANG

SPECIFICATIONS (CA-13)

Crew: Pilot

Length: 25ft 6in (7.77m)

Wingspan: 36ft 0in (10.97m)

Height: 9ft 7in (2.92m)

Empty: 5,373lb (2,437kg)

Max T/O: 7,699lb (3,492kg)

Max Speed: 302mph (486km/h)

Range: 930 miles (1,497km)

Powerplant: Pratt & Whitney R-1830-S3C4-G Twin Wasp

Output: 1,200hp (894kW)

Armament: Two 20mm cannon and four 0.303in machine guns in wing; four 20lb (9kg) smoke bombs under wings

First Flight Date: 28 May 1942

The only Australian-designed fighter aircraft to ever see combat, the Boomerang was created in record time in the wake of the Japanese raid on Pearl Harbor on 7 December 1941. Realizing that neither the British nor American governments could spare valuable fighter aircraft to stem the Japanese tide in Southeast Asia, the Australians set about producing their own home-built machine for service with the Royal Australian Air Force (RAAF). The end result was the Commonwealth Aircraft Corporation (CAC) CA-12 Boomerang, which completed its maiden flight on 28 May 1942 – just 16 weeks and three days after its design had been approved.

Constructed around the largest engine then built in Australia (the Pratt & Whitney R-1830 Twin Wasp), and incorporating as many components from the semi-indigenous Wirraway trainer/dive-bomber as possible, the Boomerang was highly manoeuvrable but slow when compared with its fighter contemporaries. The aircraft was therefore relegated to the

army support role when it reached the frontline in mid-1943, the USAAF having since arrived in-theatre with vastly superior fighters, such as the P-38 and P-47. A total of 250 CA-12/13/19 Boomerangs were eventually built by the CAC factory at Fisherman's Bend, in Melbourne, Victoria, between 1942 and 1945, and the aircraft performed valuable work over the mountainous terrain of New Guinea, usually operating under Australian Army control. Surviving Boomerangs were retired by the RAAF shortly after VJ Day.

FIGHTER DETAILS



CA-13 Boomerang A46-126/BF-S of No 5 Sqn, Kingaroy, Queensland, early 1944

This No 5 Sqn aircraft was one of 95 CA-13 Boomerangs built for the RAAF by the CAC, the fighter being adorned with a 'Sinbad' motif just forward of the cockpit. The CA-13 differed from the CA-12 in having a flame damper exhaust (starboard side), wooden instead of metal wingtips, a wooden pilot's seat, mechanical rather than hydraulic gun cocking and metal rather than fabric-covered ailerons. A46-126 was delivered in August 1943 and 'converted to components' in October 1944.



CA-13 Boomerang A46-195/QE-A of No 4 Sqn, Labuan, Malaya, spring 1945

A46-195 was delivered to the RAAF in April 1944 and assigned to No 4 Sqn, which had transitioned from obsolete CAC Wirraways to Boomerangs in May of the previous year. Tasked with undertaking tactical reconnaissance for Allied troops in New Guinea and New Britain, No 4 Sqn deployed to Morotai and then the island of Labuan to support Australian ground forces in the Borneo campaign. A46-195 was destroyed in a crash at the Labuan airstrip in July 1945

CURTISS P-36/HAWK 75

SPECIFICATIONS (P-36C)

Crew: Pilot

Length: 28ft 6in (8.69m)

Wingspan: 37ft 3.5in (11.37m)

Height: 12ft 2in (3.71m)

Empty: 4,567lb (2,072kg)

Max T/O: 6,010lb (2,726kg)

Max Speed: 300mph (483km/h)

Range: 825 miles (1,328km)

Powerplant: Pratt & Whitney R-1830-13 Twin Wasp

Output: 1,050hp (783kW)

Armament: One 0.30in and one 0.50in machine guns in nose, with two additional 0.30in machine guns in wings; Hawk 75A had up to six 7.5mm machine guns, and provision for 400lb (181kg) of underwing bombs

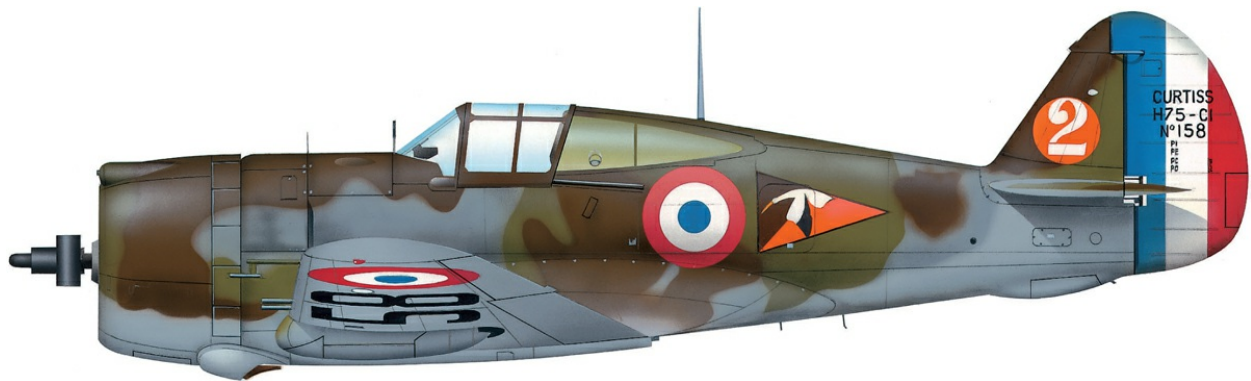
First Flight Date: 15 May 1935 (Model 75) and February 1937 (Y1P-36)

Forerunner of the famous 'Hawk' series of fighters produced in great numbers by Curtiss during World War II, the original Model 75 was the losing design in a competition fly-off held by the US Army Air Corps (USAAC) for a new monoplane fighter in mid-1935. Beaten by the Seversky P-35, the Curtiss design was overhauled by the company primarily through the fitment of a more powerful Twin Wasp engine. The resulting Y1P-36 was ordered into production in 1936, and by the time of the Pearl Harbor raid on 7 December 1941, 209 P-36A/Cs had been delivered to the USAAC. American examples engaged Japanese carrier-based aircraft during the attack on Hawaii, and a number were lost in the ill-fated defence of the Philippines.

Export orders were also received by Curtiss for its fighter, designated the Hawk 75, and large numbers were bought by a clutch of nations, including around 350 (out of an order for 620) for the French. *Armée de l'Air* units equipped with these aircraft were credited with destroying

311 German aircraft during the Battle of France. The remaining aircraft not delivered to the French were issued instead to the RAF as Mohawk IVs, and they were thrown into combat in the Far East against the Japanese in 1942–43. Dutch and Finnish Hawk 75s (the latter sold to the Finns by the Germans from captured stocks of French and Norwegian aircraft) also fought in the Far East and on the Karelian Front, respectively. Despite production totalling just 1,424 aircraft, the Hawk saw widespread combat in World War II.

FIGHTER DETAILS



Hawk 75A-2 No 158 '2' of Lt Edmond Marin-la-Meslée, *1eme Escadrille of Groupe de Chasse I/5*, Suippes and St Dizier, France, May 1940

No 158 was flown by future ranking Hawk 75A ace Lt Edmond Marin-la-Meslée from October 1939. Indeed, he achieved some of his first successes with it until the fighter was hit by return fire from an He 111 that he was attacking on 18 May 1940. Although virtually overcome by the petrol fumes that filled the cockpit, Marin-la-Meslée managed to nurse his machine down for a belly landing at St Dizier.



Mohawk IV BJ545/C of Sqn Ldr CG St D Jefferies, No 155 Sqn, Imphal, India, November 1943

The only Commonwealth ace to be credited with a victory while flying a Mohawk, Sqn Ldr 'Porky' Jefferies was CO of No 155 Sqn for almost a year. During this period he regularly flew BJ545, and he was at the controls of the fighter on 2 November when he led a six-aircraft strafing attack on a Japanese camp in the Tauk area. Jefferies' aircraft, which has India Command pattern roundels, was scrapped soon after being withdrawn from service in early 1944.

CURTISS P-40B/C TOMAHAWK

SPECIFICATIONS (P-40C)

Crew: Pilot

Length: 31ft 8.5in (9.66m)

Wingspan: 37ft 3.5in (11.37m)

Height: 10ft 7in (3.22m)

Empty: 5,812lb (2,636kg)

Max T/O: 8,058lb (3,655kg)

Max Speed: 345mph (555km/h)

Range: 1,230 miles (1,979km) with external drop tank

Powerplant: Allison V-1710-33

Output: 1,040hp (775kW)

Armament: Two 0.50in machine guns in nose and two or four 0.30in machine guns in wings

First Flight Date: 14 October 1938

Overshadowed by other, more successful USAAF fighter types like the P-38 Lightning, P-47 Thunderbolt and P-51 Mustang, the Curtiss P-40 was nevertheless the primary American fighter at the time of Japan's surprise attack on Pearl Harbor and the Philippines. The aircraft was subsequently responsible for 'holding the line' in the Pacific for much of 1942 as the US Army Air Corps (USAAC) and Royal Australian Air Force (RAAF) struggled to counter the aerial onslaught unleashed by the Japanese.

Developed simply by replacing the P-36's Twin Wasp radial with a supercharged Allison V-1710 inline engine, the XP-40 prototype (initially known as the Hawk 81) impressed the USAAC so much that an order for 524 aircraft was placed in early 1939. This was the largest contract for aircraft issued to a manufacturer since World War I, and the first production example flew in April 1940. A large number of P-40B/Cs (no A-models were ever built) had been delivered to the USAAC by 7 December 1941, and these initially took the fight to the Japanese despite

quickly being shown to be inferior to enemy fighters such as the A6M Zero-sen and Ki-43 Hayabusa.

Aside from USAAC use, the Curtiss design was also widely used by the RAF, which christened it the Tomahawk. Indeed, no fewer than 1,180 fighters were acquired by the British, and these were in turn used by RAF, RAAF, Royal Canadian Air Force and South African Air Force units, primarily in North Africa and the Middle East in 1941–42. Around 100 ex-British aircraft were issued to the American Volunteer Group (dubbed the 'Flying Tigers') in China and Burma at around the same time, while Tomahawks were also supplied to the Soviet Union from late 1941.

FIGHTER DETAILS



Tomahawk IIB AN413 of Plt Off Jack Bartle, No 112 Sqn, Landing Ground 102, Egypt, October 1941

Australian ace Plt Off Jack Bartle was assigned AN413 soon after he joined No 112 Sqn in September 1941. Although decorated with the unit's famous sharkmouth marking, it lacked the unit's GA code letters. Bartle personalized AN413 with the outline of a kangaroo and the name *NAN* beneath the cockpit. Despite often flying AN413, he made no claims in it. Indeed, the fighter was written off with combat damage after a brush with Bf 109s on 20 November, two days before Bartle's first victory.



Tomahawk IIB (serial unknown) of Lt Aleksei Khlobystov, 20th GIAP, Murmashi, northern Karelia, April 1942

Bearing a temporary winter scheme over its RAF camouflage, this aircraft was used by ace Lt Aleksei Khlobystov to famously score two ramming victories (a Bf 109 and a Bf 110) in a single mission on 8 April 1942. He then managed to land his badly damaged fighter. Khlobystov rammed a third enemy aircraft the following month, and he had been credited with seven individual and 24 shared victories by the time of his death on 13 December 1943.

CURTISS P-40 KITTYHAWK/WARHAWK

SPECIFICATIONS (P-40E)

Crew: Pilot

Length: 33ft 4in (10.16m)

Wingspan: 37ft 4in (11.38m)

Height: 12ft 4in (3.76m)

Empty: 6,300lb (2,858kg)

Max T/O: 9,100lb (4,128kg)

Max Speed: 335mph (539km/h)

Range: 900 miles (1,448km) with external drop tank

Powerplant: Allison V-1710-39

Output: 1,150hp (857kW)

Armament: Six 0.50in machine guns in wings; one 500lb (227kg) bomb under fuselage or two 100lb (45kg) bombs under wings

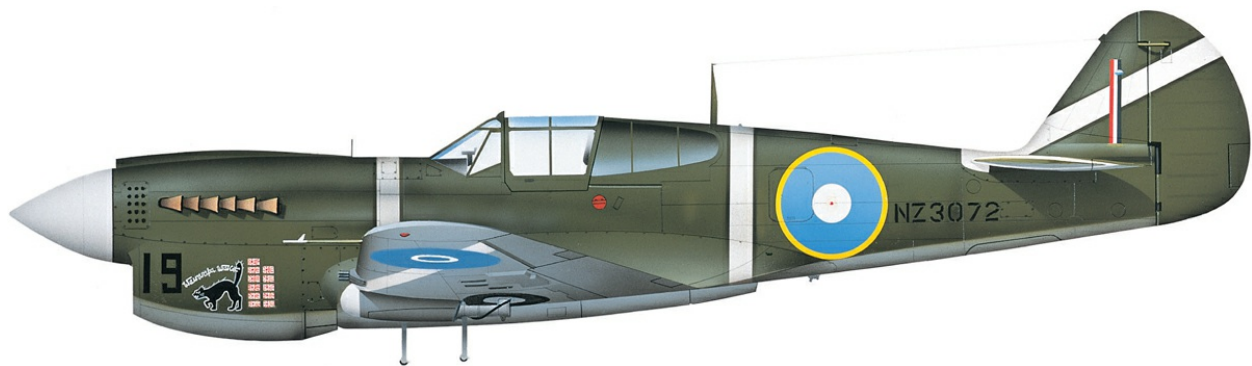
First Flight Date: 22 May 1941

With the further development of the Allison V-1710, Curtiss kept pace by producing the P-40D/E in 1941. The primary differences between these models and the earlier P-40B/C centred on a drastically revised nose shape due to the chin radiator being moved forward, which in turn allowed the propeller thrust line to be raised, the undercarriage to be shortened and the fuselage top line to be lowered and recontoured. The modifications to the forward fuselage also meant that the nose guns were moved to the wings, changing from 0.30in to 0.50in Brownings in the process – the US Army Air Corps' E-model differed from the export P-40D in having six 0.50in guns in the wings rather than four. As with the Tomahawk, the RAF was a major export customer for the aircraft, which it christened the Kittyhawk. Despite suffering from poor performance at altitudes above 15,000ft, the aircraft proved very successful in the fighter-bomber role, and it was used in this capacity by the Royal Canadian Air Force, Royal Australian Air Force and the South African Air

Force.

In US service, the aircraft received the appellation Warhawk, and subsequent variants of the fighter were powered by Packard Merlins as well as Allison V-1710s. Most of the Merlinengined P-40Fs (1,311 built) featured the lengthened fuselage adopted by the later mark Warhawks, this 20-inch extension improving directional stability at low speeds. No fewer than 1,300 V-1710-73-engined P-40Ks were built virtually alongside the F-models, followed by 600 P-40Ms, which utilized the V-1710-81 version of Allison's legendary inline engine. The P-40L (700 built) was a stripped-out Warhawk, which enjoyed improved performance through the shedding of weight by the deletion of two wing guns and excess fuel capacity. The final variant to attain production status was the P-40N, 1,977 of which were built in 1943–44 – more than 11,600 Warhawks had been completed by the time the last P-40N was delivered in December 1944. Used by the USAAF in the Pacific, China–Burma–India, North African and Mediterranean theatres, the Warhawk was quickly retired after VJ Day.

FIGHTER DETAILS



P-40M Kittyhawk III NZ3072 of Flg Off Geoff Fisken, No 14 Sqn RNZAF, Henderson Field, Guadalcanal, July 1943

The Commonwealth's leading ace in the war against Japan, Fisken had joined the newly formed No 14 Sqn after escaping from Malaya in 1942. In mid-1943 No 14 Sqn moved up to Guadalcanal, where Fisken used this aircraft to claim two Zero-sens destroyed on 12 June. As both he and his groundcrew came from Wairarapa on the southeastern corner of New Zealand's North Island, NZ3072 was suitably decorated and named *Wairarapa Wildcat*. It eventually carried Fisken's impressive scoreboard.



P-40F-15 41-19896 of Lt Walter B 'Bud' Walker, 317th FS/325th FG, Mateur, Tunisia, August 1943

Lt 'Bud' Walker joined the 325th FG in January 1943, and on 30 July that same year he became the group's third ace. On that date he scored three victories during an aerial battle over Sardinia in P-40F 41-19896, increasing his overall tally to five. He also suffered light wounds during the dogfight, and received a Purple Heart during Bob Hope's USO show at Mateur the following month.

de HAVILLAND MOSQUITO

SPECIFICATIONS (MOSQUITO F II)

Crew: Pilot and navigator

Length: 40ft 10in (12.44m)

Wingspan: 54ft 2in (16.51m)

Height: 15ft 3in (4.65m)

Empty: 14,300lb (6,486 kg)

Max T/O: 20,000lb (9,072 kg)

Max Speed: 370mph (595km/h)

Range: 1,770 miles (2,848km) with external drop tanks

Powerplants: two Rolls-Royce Merlin 23 engines

Output: 2,920hp (2,176kW)

Armament: Four 20mm cannon and four 0.303in machine guns in nose

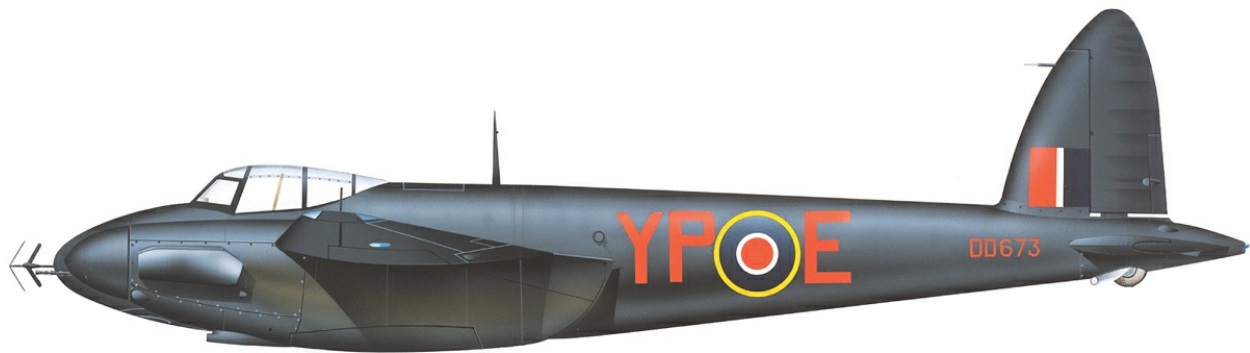
First Flight Date: 15 May 1941 (F II)

Built to replace the ageing Blenheim, the Mosquito flew very much in the face of convention by utilizing a wooden fuselage and wings. Initially rejected by the Air Ministry in the autumn of 1938 on the grounds of its unorthodox construction, the aircraft's wooden structure actually ensured its series production with the outbreak of war due to the fear that the supply of light alloys from abroad would be affected by the conflict. An order for 50 aircraft was received on 1 March 1940, and the prototype Mosquito took to the skies eight months later. The prototype Mosquito fighter (F II) duly followed on 15 May 1941, the sleek Merlin-powered design soon proving its worth during flight trials.

The first Mosquito to see operational service was the photo-reconnaissance variant on 20 September 1941, while bomber-optimized B IVs began to reach the frontline two months later. The first Mosquito fighter variant committed to combat was the F/NF II, which began to reach the frontline in January 1942. Over the next two years the Mosquito gradually replaced the Beaufighter as the RAF's primary

nightfighter, with the AI Mk VIII radar-equipped NF XIII and NF 30 being the ultimate wartime variants. The aircraft proved to be a deadly nocturnal hunter, with some of the RAF's leading nightfighter pilots claiming the bulk of their victories in the Mosquito. For example, Wg Cdr Branse Burbridge claimed 21 kills in the aircraft, while Wg Cdr John 'Cat's Eyes' Cunningham was credited with 19 victories. In the dayfighter-bomber role, the FB VI enjoyed so much success that it became the most important Mosquito version, at least in terms of numbers built (2,257 in Britain), of them all.

FIGHTER DETAILS



Mosquito NF II DD673/YP-E of Sqn Ldr N J Starr, No 23 Sqn, Manston, Kent, August 1942

'Jackie' Starr was a flight commander with No 23 Sqn, and on one of the unit's first operations with the Mosquito NF II he took off from Manston in DD673, bound for the Dutch airfield at Deelen. Ten miles off the enemy coast the aircraft's port engine failed and he returned to base. DD673 collided with a steamroller on landing, although the crew were uninjured. Starr later achieved five victories before being killed in a flying accident in January 1945.



Mosquito FB VI RS575/3P-V of Wg Cdr H C Kelsey, No 515 Sqn, Little Snoring, Norfolk, February–April 1945

In late 1944 Wg Cdr Howard Kelsey assumed command of No 515 Sqn, and on Christmas Eve he claimed three aircraft destroyed on the ground. In early 1945 he began flying RS575 regularly, and he claimed three victories (two Ju 88s and a Do 217) with the aircraft between 2 February and 24 April. His final success was proved to be the last Mosquito victory claimed by a No 100 Group aircraft. RS575 remained in RAF service until 1954.

DEWOITINE D.520

SPECIFICATIONS (D.520C-1)

Crew: Pilot

Length: 28ft 8.5in (8.76m)

Wingspan: 33ft 5.5in (10.20m)

Height: 8ft 5in (2.56m)

Empty: 4,612lb (2,092kg)

Max T/O: 6,129lb (2,780kg)

Max Speed: 329mph (529km/h)

Range: 777 miles (1,250km)

Powerplant: Hispano-Suiza 12Y-45

Output: 910hp (678kW)

Armament: One 20mm cannon firing through propeller hub and four 7.5mm machine guns in wing

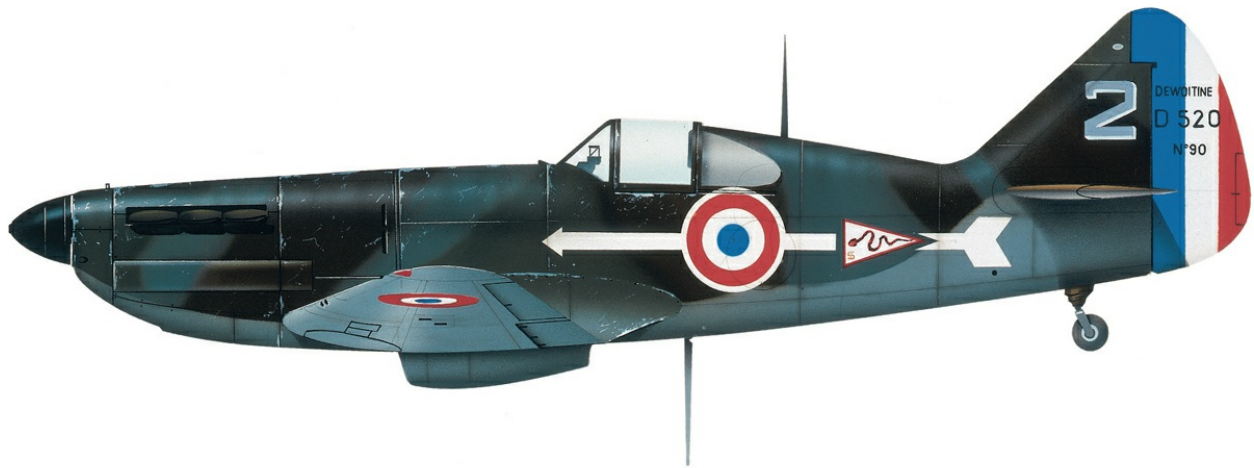
First Flight Date: 2 October 1938

Undoubtedly the best French fighter in service at the time of the German invasion in May 1940, the D.520 had been designed to meet an *Armée de l'Air* requirement for a monoplane fighter issued in 1936. Unfortunately for France, the first examples of the aircraft only began to reach the frontline in December 1939, these fighters being part of an order for 2,300 D.520s. Production rates were poor, and by the eve of the *Blitzkrieg*, just 36 examples had made it into squadron service. However, the invasion spurred a massive production programme, and by the Armistice on 30 June, 437 had been built. No further D.520s were completed until June 1941, when the Vichy government ordered Dewoitine to reopen the production line. A further 478 were then produced until construction ceased in mid-1943.

Aside from its use by the French both before and after capitulation, the D.520 was also employed as a fighter trainer by the Luftwaffe, and others were passed on to Italy, Bulgaria and Romania in the wake of the French surrender in 1940. As a fighter, the D.520 enjoyed some success, being

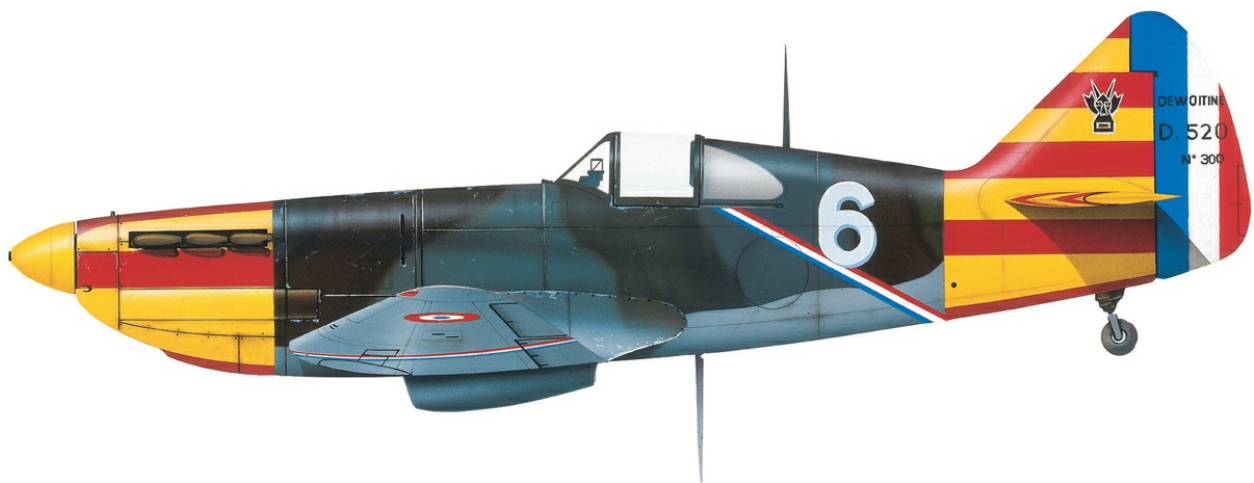
credited with 114 German aircraft destroyed during the Battle of France, plus further victories (against Allied aircraft) in Vichy hands in North Africa and Syria in 1941–42.

FIGHTER DETAILS



D.520 No 50 '2' of Sgt Michel Madon, Escadrille SPA 88 of Groupe de Chasse I/3, Oran, Algeria, November 1941

Michel Madon was one of the first pilots to achieve 'acedom' with the D.520, having claimed seven victories with GC I/3 by 16 June 1940. He next enjoyed success with the Dewoitine fighter during the Operation *Torch* landings of 8 November 1942, downing perhaps as many as three C-47s and a single Sea Hurricane on that day. This artwork depicts Madon's No 50 a year prior to this action, adorned with the distinctive serpent badge of SPA 88.



D.520C-1 No 300 '6' of Lt Pierre Le Gloan, 5eme Escadrille of Groupe de Chasse III/6, Algeria, spring 1942

This Vichy French Air Force machine, flown by high-scoring ace Lt Pierre Le Gloan, has full red

and yellow neutrality markings (known as 'the slave's livery') demanded by the Franco-German Armistice of June 1940. Note that the 'ace stripes' synonymous with elite French fighter pilots adorn both the wings and fuselage of this aircraft. Le Gloan would shoot down 18 aircraft (four German, seven Italian and seven British) during three years of combat, making him the fourth-ranking French ace of the war.

DORNIER Do 17/215/217

SPECIFICATIONS (Do 217J)

Crew: Three-/four-man crew

Length: 59ft 0in (18.00m)

Wingspan: 62ft 4in (19.00m)

Height: 16ft 3in (4.97m)

Empty: 20,613lb (9,350kg)

Max T/O: 29,056lb (13,180kg)

Max Speed: 304mph (489km/h)

Range: 1,305 miles (2,100km)

Powerplants: two BMW 801A engines

Output: 3,160hp (2,356kW)

Armament: Four 7.9mm machine guns or 20mm cannon in nose; 13mm machine gun in dorsal turret; aft-firing 13mm machine gun in ventral gondola, and bomb-bay retained in certain variants

First Flight Date: late 1941 (Do 217J)

Based on Dornier's successful twin-engined medium bomber, the Do 17Z-7 night intruder had been built in very limited numbers from June 1940 for the nocturnal Defence of the Reich. The Do 17Z-3 bomber airframes selected for conversion into Z-7 *Kauz Is* had their glazed noses replaced with the solid nose of a Ju 88C-1/2 'heavy' fighter, complete with its armament of three 7.9mm MG 17 machine guns and one 20mm MG FF cannon. The *Nachtjagd* quickly realized that the Z-7 was operationally compromised in respect to its armament, and Dornier was instructed to design an entirely new nose that housed four machine guns and two cannon. In the tip of the nose was an infra-red spotlight called *Spanner-Anlage* that was subsequently replaced by first-generation FuG 202 *Lichtenstein* radar. The revised aircraft was designated the Do 17Z-10 *Kauz II*. At least 20 near-identical Do 215s (the export version of the Do 17Z) were also converted into *Kauz III* nightfighters, and they too were fitted with an infra-red spotlight that was quickly replaced by FuG

202 radar equipment.

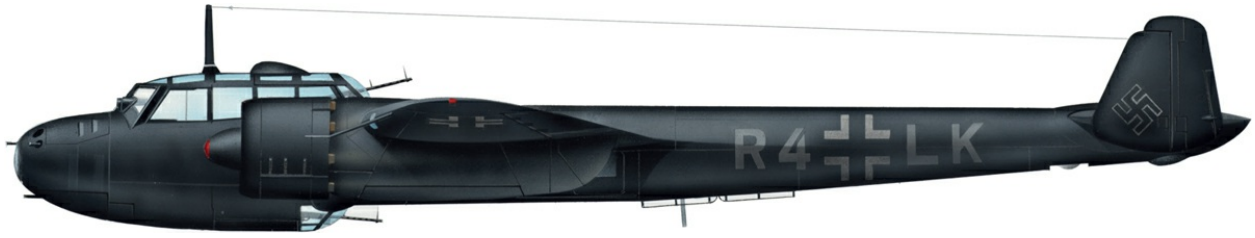
When the *Kauz II* and *III* nightfighters were found to be inferior to Ju 88C, Dornier set about creating the Do 217J/N for the Luftwaffe's continually expanding *Nachtjagd*. With the arrival of these new aircraft in the frontline in 1942, the German nightfighter force could truly boast a heavyweight nocturnal intruder. Fitted with an improved FuG 202 *Lichtenstein* BC radar, the J-2 was the primary operational variant of 1942–43, partially equipping eight *Gruppen* until phased out in 1944. Twelve J-models were also supplied to the Italians in 1943 to help defend the northern industrial centres of Turin, Genoa and Milan. The final variant to enter service was the N-1/2, this model having the turret, ventral gun and bomb-bay removed and utilizing an upgraded version of the FuG 202. Like the J-model, it too left the frontline in early 1944, when the stopgap Dornier nightfighters were replaced by more nimble Ju 88s and Bf 110s as production of the latter types began to keep pace with demand.

FIGHTER DETAILS



Do 17Z-10 R4+LK of 2./NJG 2, Gilze-Rijen, the Netherlands, November 1940

The first Do 17Z-7 nightfighter entered limited service with I./NJG 1 towards the end of June 1940. Three months later I./NJG 2 was formed from II./NJG 1, operating a mix of Ju 88C-2s and Do 17Z-10s – the latter were exclusively flown by 2. *Staffel*. R4+LK was the first 2./NJG 2 aircraft to be damaged in combat, the Z-10 apparently being attacked by an enemy nightfighter while being flown by Oberfeldwebel Herbert Schmidt on 9 November 1940.



Do 215B-5 R4+DC of Oberleutnant Helmut Lent, *Gruppenkommandeur* II./NJG 2, Leeuwarden, the Netherlands, 1942

This FuG 202-equipped aircraft was flown by II./ NLG 2 in a non-standard 'factory finish' applied by Dornier to nightfighter variants of the Do 17/215 delivered to the *Nachtjagd*. The aircraft also has an additional belly pack housing two 20mm MG FF cannon. High-scoring nightfighter ace Oberleutnant Helmut Lent flew this aircraft, among other types, while serving as *Gruppenkommandeur* of II./NJG 2 at Leeuwarden from November 1941 through to October 1942. Like many German nightfighters, the aircraft bears the *Engländerblitz* insignia on its nose.

DOUGLAS P-70/DB-7 HAVOC

SPECIFICATIONS (P-70)

Crew: Pilot and navigator

Length: 47ft 7in (14.50m)

Wingspan: 61ft 4in (18.69m)

Height: 17ft 7in (5.36m)

Empty: 16,031lb (7,272kg)

Max T/O: 21,264lb (9,645kg)

Max Speed: 329mph (529km/h)

Range: 1,060 miles (1,696km)

Powerplants: two Wright R-2600-11 Double Cyclone engines

Output: 3,200hp (2,386kW)

Armament: Six 0.50in machine guns in ventral tray or similar number in nose

First Flight Date: early 1941

First developed as a makeshift nightfighter by the RAF in Havoc I form in 1940, the Douglas 'medium twin' proved relatively effective in the early war years in this specialist role. Chosen by the British because it was one of the few aircraft that could accommodate the cumbersome early air intercept (AI) radar and still have an adequate performance as a fighter, the Havoc Is were converted from around 100 DB-7s originally ordered for the *Armée de l'Air* that had not been delivered prior to France's surrender in June 1940. A number of Havocs were also equipped with the Turbinlite searchlight in the extreme nose, these unarmed aircraft operating in unison with Hurricane or Defiant nightfighters. The surviving Havoc I/IIs had been replaced by Beaufighters by 1942.

The USAAF's P-70 followed the RAF's Havoc I lead, and it too was built in modest numbers as an interim nightfighter, pending the arrival of the P-61 Black Widow in 1944. Used operationally by four squadrons in the Pacific, the AI Mk IV radar-equipped P-70s enjoyed a modicum of success against Japanese bombers. A small number of A-20G/J's were also

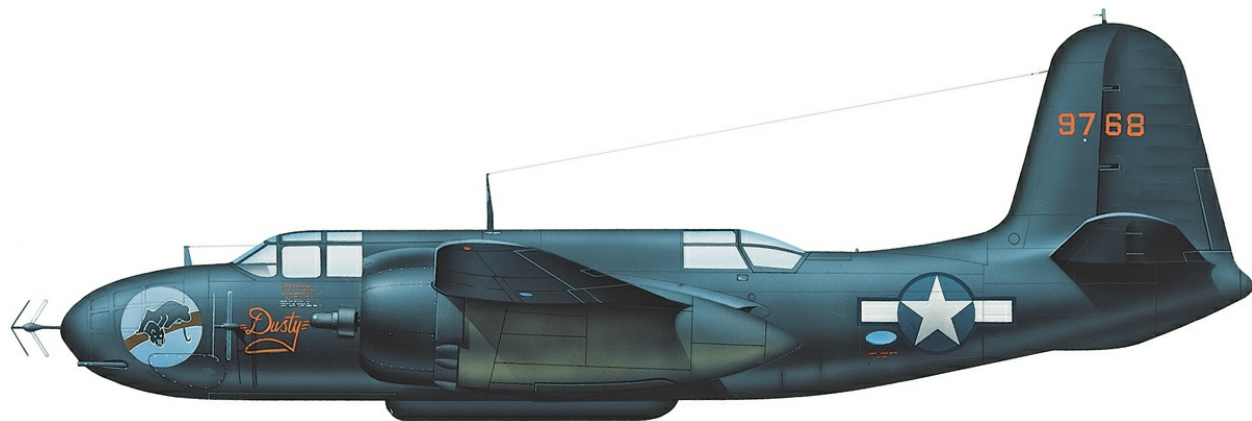
equipped with SCR-720/729 radar and used as nightfighter trainers in the USA in 1943–44. Overall, approximately 500 P-70/DB-7s were completed by Douglas, compared with almost 7,000 A-20 medium bombers.

FIGHTER DETAILS



Havoc I BJ461/VY-Y of Wg Cdr P W Townsend, No 85 Sqn, Debden, Essex, April 1941

Havoc I BJ461 was the usual mount of Plt Off Geoffrey Goodman, who was to make a total of eight claims, including four destroyed. The aircraft was also flown on occasion by other significant pilots in No 85 Sqn, including the CO, Battle of Britain ace Wg Cdr Peter Townsend, and future Mosquito ace Plt Off Nigel Bunting. BJ461 was later converted into Turbinlite searchlight configuration and saw further service until early 1943.



P-70 Havoc 39-768 of 1Lt F Secord, Det 'A' 6th NFS, New Guinea, late September 1943

Among the first P-70 conversions to see action in the Pacific was this example, nicknamed *Dusty*, which featured nose-mounted radar and a 20mm gun tub built into the bomb-bay area. The aircraft came from the main production batch of converted A-20G/Js and was delivered to the USAAF's 6th NFS to be flown by Lt Fred Secord. The unit was initially based in New Guinea

following a long over-water flight to Australia. *Dusty* was heavily damaged in a wheels-up landing at Townsville, Queensland.

FAIREY FULMAR

SPECIFICATIONS (FULMAR I)

Crew: Pilot and observer/gunner

Length: 40ft 3in (12.27m)

Wingspan: 46ft 4.5in (14.13m)

Height: 10ft 8in (3.25m)

Empty: 6,915lb (3,137kg)

Max T/O: 9,800lb (4,445kg)

Max Speed: 256mph (412km/h)

Range: 830 miles (1,335km)

Powerplant: Rolls-Royce Merlin VIII

Output: 1,080hp (805kW)

Armament: Eight 0.303in machine guns in wings; optional single 0.303in machine gun in rear cockpit; two 250lb (113kg) bombs under wings

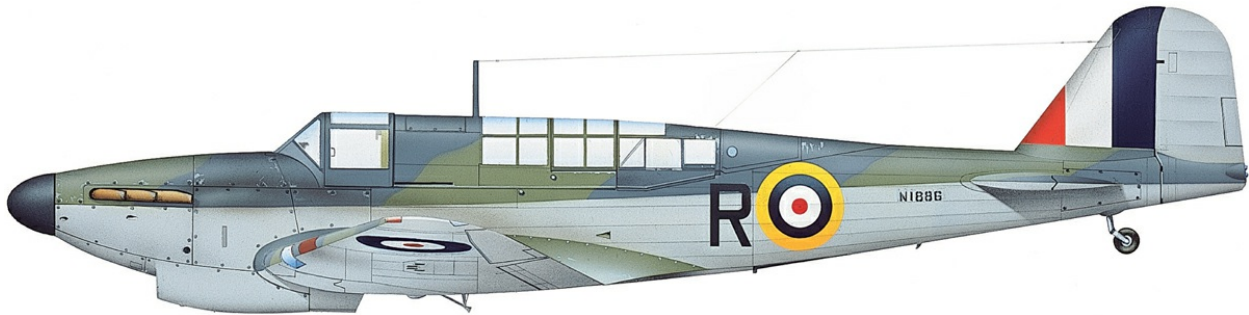
First Flight Date: 4 January 1940

Developed from the P.4/34 light bomber of 1937 through the addition of folding wings, a catapult spool and an arrestor hook, among other additions, the Rolls-Royce Merlin-powered Fulmar gave the Royal Navy its first eight-gun fighter when it entered service in May 1940. Thrown into action shortly thereafter protecting Malta convoys from the flightdeck of the aircraft carrier HMS *Illustrious*, the fighter provided sterling service particularly against Italian and German opponents in the Mediterranean in 1941–42. Serving with 11 Fleet Air Arm squadrons, the Fulmar was also in the thick of the action off Norway and Ceylon, and completed its frontline service as a nightfighter protecting Russia-bound convoys in 1944–45.

The last Fulmar (a tropicalized Mk II, fitted with a Merlin 30 engine) was delivered in February 1943, bringing to a close a production run of 500 aircraft. By then, most Fleet Air Arm fighter units had replaced the Fairey fighter with Seafires or American-sourced Wildcats (christened

'Martlets' in British service) and Corsair Is. Aside from its frontline role, the Fulmar also proved ideally suited to deck-landing training, as its vice-free handling qualities and slow stalling speed made it easy for novice naval aviators to fly 'around the boat'.

FIGHTER DETAILS



Fulmar I N1886 of Sub Lt I L F Lowe, 806 NAS, HMS *Illustrious*, off Malta, 2 September 1940

806 Naval Air Squadron (NAS) was the first squadron to take the Fulmar into action when, on 2 September 1940 off the Greek island of Rhodes, a section of three aircraft sighted a Cant Z.501 Gabbiano (Gull) of the *Regia Aeronautica*. Sub Lt Ivan Lowe was flying N1886, and diving in from astern he, his CO, Lt Cdr Charles Evans, and Lt Cdr Kilroy shot the Italian flying boat down to the cheers of the entire fleet. Lowe would become an ace two months later.



Fulmar I N2006 of Lt Donald Gibson, 803 NAS, HMS *Formidable*, central Mediterranean, 18 April 1941

Lt Donald Gibson was serving as the senior pilot of 803 NAS when he launched in this aircraft off Rhodes on 18 April 1941 at the head of a section of three Fulmars against inbound Italian bombers. Gibson led the attack, but N2006 was hit by return fire and he was wounded. Although he managed to land on board *Formidable*, N2006's arrestor hook pulled out and the Fulmar went over the side. Gibson was rescued by a destroyer, but his observer perished.

FAIREY FIREFLY I

SPECIFICATIONS (FIREFLY I)

Crew: Pilot and observer/gunner

Length: 37ft 7.25in (11.46m)

Wingspan: 44ft 6in (13.56m)

Height: 13ft 7in (4.14m)

Empty: 9,750lb (4,423kg)

Max T/O: 14,020lb (6,359kg)

Max Speed: 319mph (513km/h)

Range: 1,070 miles (1,722km)

Powerplant: Rolls-Royce Griffon IIB

Output: 1,730hp (1,290kW)

Armament: Four 20mm cannon in wings; provision for two 1,000lb (454kg) bombs or eight 60lb (27kg) rockets under wings

First Flight Date: 22 December 1941

Pleased with the early fleet service of the Fulmar, the Royal Navy contracted Fairey to work on a successor as early as 1940. Using the familiar Fleet Air Arm sobriquet of Firefly, the new fighter began to reach the fleet in March 1943 in F I fighter-bomber form. Powered by a Rolls-Royce Griffon engine (as fitted to the RAF's Spitfire XII and XIV), the Firefly made its operational debut in July 1944 when squadrons from HMS *Indefatigable* participated in a series of raids aimed at sinking the German battleship *Tirpitz*, moored in a Norwegian fjord. Later that same year the aircraft commenced a sustained period of combat against Japanese targets in the Indian and Pacific Oceans. The oil refineries on Sumatra were particularly hard hit by Fleet Air Arm squadrons in early 1945, and Firefly units were in the forefront of these missions.

Aside from the fighter-bomber variant, radar-equipped FR I photo-reconnaissance and NF I/II nightfighter Fireflies (which were all part of a production run totalling 842 aircraft) also took the fight to the enemy in

the final months of the war. Post-war, the heavily revised Firefly Mk IV was built in significant numbers – as were several other subsequent variants – from 1946 through to 1950, with the aircraft participating in the Korean War from both British and Australian carriers.

FIGHTER DETAILS



Firefly I DV119 of Sub Lt JP Stott, 1770 NAS, HMS *Indefatigable*, Okinawa, 12 April 1945

During operations off Formosa on 12 April 1945, a pair of 1770 Naval Air Squadron (NAS) Firefly Is (including DV119, flown by Sub Lt Phil Stott and his observer Lt B Ward) were escorting a US Navy PBM Mariner flying boat on an air-sea rescue mission when they spotted five Imperial Japanese Army Air Force (IJAAF) Ki-51 'Sonia' light bombers. The fighters attacked, and each of the Firefly pilots shot down two bombers apiece. Stott, who had claimed three shared victories the previous January, thus became the Royal Navy's only Firefly ace.



Firefly I DK431 of Lt Cdr W JR MacWhirter, 1771 NAS, HMS *Implacable*, western Pacific, July 1945

British Pacific Fleet aircraft carrier HMS *Implacable* embarked 1771 NAS as its Firefly squadron in the final months of the war. The unit was led by Lt Cdr Bill MacWhirter, whose personal aircraft was DK431 *Evelyn Tensions*. The aircraft was also adorned with a yellow map of Japan just forward of the cockpit.

FIAT CR.32

SPECIFICATIONS (CR.32)

Crew: Pilot

Length: 24ft 5.5in (7.45m)

Wingspan: 31ft 2in (9.50m)

Height: 8ft 11in (2.72m)

Empty: 3,042lb (1,380kg)

Max T/O: 4,200lb (1,905kg)

Max Speed: 221mph (357km/h)

Range: 485 miles (780km)

Powerplant: Fiat A 30 RA

Output: 600hp (447kW)

Armament: Two 12.7mm machine guns in nose; CR.32bis two 12.7mm machine guns in nose and two 7.7mm machine guns in wings; one 220lb (100kg) or two 110lb (50kg) bombs under wings

First Flight Date: 28 April 1933

Developed from the CR.30 fighter built in small numbers for the *Regia Aeronautica* in 1933–34, the CR.32 was thoroughly obsolescent by the outbreak of World War II. However, thanks to a production run that totalled more than 1,000 aircraft, it was still in more widespread use when Italy declared war on the Allies on 10 June 1940 than any other fighter type then in service with the *Regia Aeronautica*. Like all Fiat biplane fighters, the CR.32 was highly manoeuvrable, and it also enjoyed some success in export markets in the final years of peace.

Extensively used by General Franco's Nationalist forces during the Spanish Civil War, the CR.32 also fought in China during the second Sino-Japanese War, in Hungary as part of the Carpathian dispute and finally in Paraguay during the Gran Chaco War. The final examples left Fiat in 1939, although 100 licence-built CR.32s were built by Hispano-Suiza in Spain between 1940 and 1943 – these aircraft were designated HA-132-L Chirris. More than 400 CR.32s remained in service with the *Regia*

Aeronautica in late 1939, and the aircraft was used both as a fighter-bomber and a nightfighter in the Greek and East African campaigns. Surviving fighters were finally relegated to training and secondary roles in late 1941.

FIGHTER DETAILS



CR.32 NC 931 of Capitán Manuel Vázquez Sagastizábal, *Escuadrilla* 1-E-3, *Grupo* 2-G-3, Aviación Nacional, Posadas, Spain, January 1939

Among the last CR.32s shipped to Spain from Italy, this aircraft received the code 3-118 when it arrived incountry in April 1938. The fighter was camouflaged with shaded olive-green patches over ochre-yellow uppersurfaces, with pale bluish-grey undersurfaces. Note the white linear profile of Giralda tower, a monument in Seville where the *Escuadrilla* was born, on the wheel spat. Capitán Vázquez lost his life in aerial combat in NC 931 over the Cordoba front on 23 January 1939.



CR.32 NC 936 of Teniente Antonio Manrique Garrido, *Escuadrilla 1-E-3*, *Grupo 2-G-3*, Aviación Nacional, Posadas, Spain, January 1939

Also shipped to Spain in April 1938, this aircraft was coded 3-123. Manrique claimed his fourth individual victory over the Cordoba front on 23 January 1939 in the action with Republican I-15s in which his *Escuadrilla* leader Capitán Vázquez was killed. This CR.32, and Vázquez's NC 931, both wore the *Patrulla Azul* emblem on their fins. This insignia consisted of three blue stylized birds (in honour of the first three pilots that formed the *Patrulla Azul* in January 1937) diving from right to left.

FIAT CR.42 FALCO

SPECIFICATIONS (CR.42)

Crew: Pilot

Length: 27ft 3in (8.30m)

Wingspan: 31ft 10in (9.70m)

Height: 10ft 10in (3.30m)

Empty: 3,763lb (1,707kg)

Max T/O: 5,302lb (2,405kg)

Max Speed: 266mph (428km/h)

Range: 630 miles (1,014km) with external fuel tanks

Powerplant: Fiat A 74 RC38

Output: 840hp (626kW)

Armament: Two 12.7mm machine guns in nose; CR.42ter two 12.7mm machine guns in nose and two 7.7mm machine guns in wings; CR.42AS two or four 12.7mm machine guns and two 220lb (100kg) bombs under wings

First Flight Date: 23 May 1938

The last Fiat biplane fighter (and effectively the last of its type in the world), the Falco (Falcon), like the its stylish predecessor the CR.32, was obsolete before the outbreak of World War II. Despite this, great numbers saw action during the conflict not only with the Italians, but also the Finns, Germans, Hungarians and Belgians.

A development of the unsuccessful CR.41, the CR.42 was created by legendary Fiat biplane designer Celestino Rosatelli – he had also been responsible for the CR.32. Extremely light on the controls, well liked by those that flew it and superbly agile, the *Falco* was the ultimate biplane fighter. However, it had the misfortune to be conceived at a time when the biplane had already been eclipsed by the monoplane as the universal fighter configuration. The prototype made its first flight as late as 23 May 1938, by which point the CR.42 was already conceptually obsolete. Nevertheless, the first examples entered frontline service with the *Regia*

Aeronautica in April 1939, followed by a handful of other export countries, including neutral Sweden. Production continued through to 1943, by which time 1,781 CR.42s had been constructed in four main variants that covered dayfighter, nightfighter and close support roles.

The Falco fought in the Greek, East African, Western European, Mediterranean and North African theatres. Indeed, it was the *Regia Aeronautica*'s staple fighter in both North and East Africa, Greece and over Malta in 1940–41, during which time its pilots routinely engaged British and Commonwealth squadrons equipped in the main with Hurricanes and Gladiators. A number of Italian pilots claimed their first victories with the Falco, including Mario Visintini, who would become the most successful biplane ace of World War II. As the Fiat fighter grew progressively more vulnerable in its designed role, surviving examples were relegated to performing nocturnal patrols over northern Italy. A small number of CR.42s also remained in service with the Luftwaffe as night ground-attack platforms in the Balkans and northern Italy following the Italian surrender in September 1943.

FIGHTER DETAILS



CR.42 (serial unknown) of Colonnello Raffaele Colacicchi, CO of 15° Stormo d'Assalto, Cyrenaica, October 1942

This aircraft displays a *Stormo* badge on the fin in the form of a flying duck wearing iron pants and throwing bombs from its wings. The *Stormo*'s number on the fuselage and the rank stripes on the wheel spats were unique to this particular machine. 15° *Stormo* flew fighter-bomber missions in North Africa from September 1942 through to February 1943.



CR.42 2563 of F 9's 1. *divisionen*, Kiruna, Sweden, May 1942

The largest export customer of the CR.42, Sweden received 72. These included 2563 of the F 9 wing (which was responsible for the air defence of Gothenburg), the fighter displaying 1. *divisionen*'s red wheel spats and the devil insignia. In July 1945 2563 was given the civilian registration SE-AOU prior to being used as a target tug.

FIAT G.50 FRECCIA

SPECIFICATIONS (G.50bis)

Crew: Pilot

Length: 27ft 2in (8.28m)

Wingspan: 36ft 1in (11.00m)

Height: 9ft 9in (2.97m)

Empty: 4,443lb (2,015kg)

Max T/O: 5,560lb (2,522kg)

Max Speed: 293mph (472km/h)

Range: 620 miles (998km)

Powerplant: Fiat A 74 RC38

Output: 840hp (626kW)

Armament: Two 12.7mm machine guns in nose

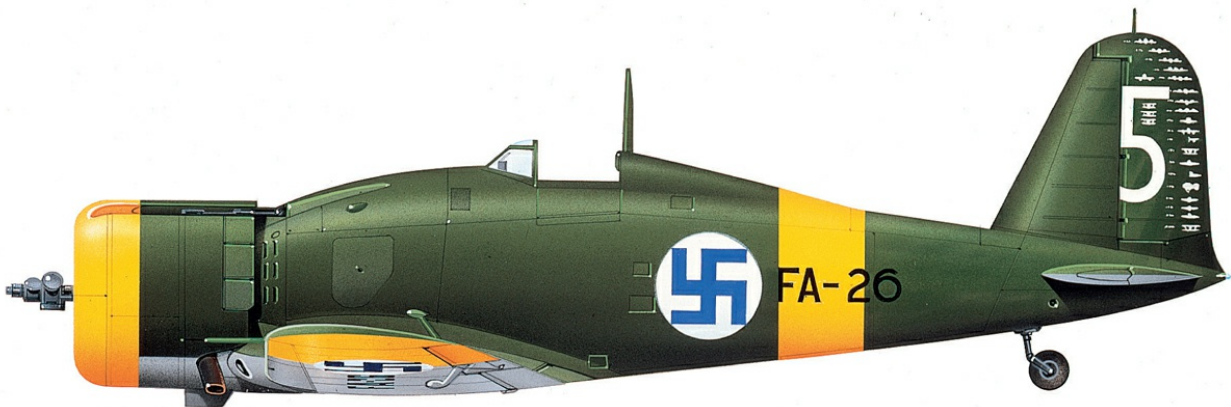
First Flight Date: 26 February 1937

Built by Fiat in response to a 1936 Italian Air Ministry requirement, the G.50 Freccia (Arrow) was the very first metal monoplane fighter to enter service with the *Regia Aeronautica*. Utilizing the same 840hp (626kW) Fiat A 74 RC38 radial engine as fitted to the CR.42, the Freccia made its combat debut in late 1938 when 12 were sent to Spain for evaluation. Pilots quickly criticized its modest armament and enclosed cockpit canopy, and although the next batch of G.50s had no additional guns, they did boast open cockpits. Following the construction of 245 G.50s, production switched to the improved G.50bis in late 1940, the new variant featuring more fuel in self-sealing tanks, increased protective armour, a redesigned fin and rudder and flattened upper fuselage to improve pilot visibility – but still no extra guns. The final series production Freccia was the G.50B, which had tandem seating for two pilots so that it could serve as an unarmed advanced trainer. Production of the latter ended in 1943, by which point 777 G.50s had been built.

Obsolescent by the end of 1940, the G.50 nevertheless saw considerable

action with the *Regia Aeronautica* in western Europe, Greece, the Western Desert, Tunisia and Sicily, before being relegated to local defence duties. Some 35 G.50s were also sold to the Finnish Air Force, which used them to engage Soviet fighters and bombers during the Winter War of 1940 and the Continuation War of 1941–44. The survivors of the latter conflict remained in service until December 1946, long after all Italian examples had been retired. The Croatian Air Force also received a small number of G.50s from both the *Regia Aeronautica* and the Luftwaffe in 1942–43, and they were used against Yugoslav Partisans in the Balkans through to war's end.

FIGHTER DETAILS



G.50 MM 4743 FA-26/'White 5' of WO Oiva Tuominen, 1/LeLv 26, Kilpasilta, Finland, October 1942

'Oiva' Tuominen was the leading G.50 ace of the Continuation War, being credited with 23 victories in the Fiat fighter – they are all marked as head-on aircraft silhouettes on FA-26/'White 5's' rudder. He flew this aircraft in 1942–43, claiming 13 of his G.50 kills with it. By war's end Tuominen had been credited with 44 victories during more than 400 missions. Between 30 November 1939 and 4 September 1944, the Finnish G.50s downed 99 enemy aircraft, with only three being lost in return.



G.50bis MM 5236 368-5 of 368^a Squadriglia, 151° Gruppo, 53° Stormo, Sfax, Tunisia, early 1943

151° Gruppo received G.50bis on 1 January 1942 when the *Asso di Spade* (Ace of Spades) unit was reactivated to bolster the air defences of northwest Italy. In January 1943, 151° Gruppo was posted to Tunisia to fly fighter-bomber missions in cooperation with the Luftwaffe, although such operations were often hindered by poor coordination between the Axis partners. By early March, when 368^a Squadriglia was withdrawn to the Italian island of Pantelleria, only seven G.50s remained from the unit's original strength of 21 aircraft.

FIAT G.55 CENTAURO

SPECIFICATIONS (G.55/I)

Crew: Pilot

Length: 30ft 9in (9.37m)

Wingspan: 38ft 10.5in (11.85m)

Height: 10ft 3.25in (3.13m)

Empty: 5,952lb (2,700kg)

Max T/O: 8,179lb (3,710kg)

Max Speed: 385mph (620km/h)

Range: 1,025 miles (1,650km) with external fuel tanks

Powerplant: Fiat RA 1050 Tifone (licence-built Daimler-Benz DB 605A)

Output: 1,475hp (1,100kW)

Armament: one 20mm cannon in propeller hub; two 12.7mm machine guns in nose; two 20mm cannon in wings

First Flight Date: 30 April 1942

Considered by many (including the Luftwaffe) to be the premier Italian fighter of the war, the G.55 Centauro (Centaur) arrived too late to make a major impact on the Allied air forces battering Italy by mid-1943. Designed as a drastically improved G.50, the G.55 utilized a more efficient wing, completely redesigned fuselage, greatly improved armament and, most importantly of all, a licence-built Daimler-Benz DB 605A inline engine. Manufacture of the sole wartime production model (G.55/I) commenced in early 1943, but it was only weeks prior to the Italian armistice of 8 September that the first Centauros arrived in the frontline.

Although the fighter saw no action with the *Regia Aeronautica*, it did, however, fight on with the pro-German *Aeronautica Nazionale Repubblicana* (ANR), as the Fiat factory producing the G.55/I was in northern Italy. The aircraft partially equipped six fighter *Gruppo* with the 274 G.55s that were built through to VE Day, and they operated

alongside Luftwaffe fighter *Gruppen* sent to Italy to help defend the areas remaining in Axis control. Blessed with outstanding high-altitude performance thanks to its DB 605A engine, the G.55 was more than capable of holding its own against the best Allied fighters of the late-war period.

Several one-off prototypes were subsequently produced during 1944, including the torpedo-equipped G.55/S (for which a production order of 100 aircraft was placed by the ANR) and the DB 603-engined G.56, but none reached production. In 1947–48 around 75 Centauros were built utilizing unfinished wartime airframes, these aircraft in turn being sold as single-seat fighters and two-seat advanced trainers to Italy, Argentina and Egypt. A Rolls-Royce Merlin-engined version of the Centauro, designated the G.59, was also created in the late 1940s when stocks of locally built DB 605s ran low. A number of Italian Air Force G.55s were subsequently re-engined, and the Syrian Air Force also acquired newly built examples. The final variants built, the G-59-4A (single-seater) and -4B (two-seater), featured bubble canopies to improve visibility for the pilot.

FIGHTER DETAILS



G.55/I Centauro MM 91088 of Tenente Vittorio Pignati di Morano, 2^a Squadriglia, 2^o Gruppo Caccia, ANR Bresso, Italy, April 1944

This aircraft was one of 274 G.55/Is built by Fiat for the ANR, allowing the latter to partially equip six fighter *Gruppo*. It was finished in the standard late-war camouflage of Verde Oliva Scuro uppersurfaces and Grigio Azzurro Chiaro undersides. The diving devil's head insignia had been applied to the Bf 109Gs of the *Regia Aeronautica*'s 3^o *Gruppo* prior to the Italian Armistice in September 1943. It was one of a number of unit badges appropriated by the ANR upon its

formation.



G.55/I Centauro MM 91091 of 4^a Squadriglia, 2° Gruppo Caccia, ANR Bresso, Italy, May 1944

MM 91091 was unusual in having its uppersurfaces in a splinter-style scheme of sand, green and brown (except for the panel aft of the cockpit, which is in Verde Oliva Scuro), with Grigio Azzurro Chiaro undersides. The insignia on the nose was inspired by 150° Gruppo Autonomo's *Gigi Tre Osei* emblem of 1942–43.

FOCKE-WULF Fw 190A/F/G

SPECIFICATIONS (Fw 190A-3)

Crew: Pilot

Length: 29ft 0in (8.84m)

Wingspan: 34ft 5.5in (10.50m)

Height: 13ft 0in (3.96m)

Empty: 6,393lb (2,900kg)

Max T/O: 8,770lb (3,978kg)

Max Speed: 382mph (615km/h)

Range: 497 miles (800km)

Powerplant: BMW 801D

Output: 1,700hp (1,268kW)

Armament: two 7.9mm machine guns in nose; four 20mm cannon in wings; provision for bombs in fighter-bomber version

First Flight Date: 1 June 1939

Arguably Germany's best piston-engined fighter of the war, the Fw 190 caught the RAF by surprise when it appeared over the Channel Front in August 1941. The aircraft would remain unmatched in aerial combat until the advent of the Spitfire IX in late 1942. Powered by the superbly compact BMW 801 radial engine, the Dr Kurt Tank-designed Fw 190 also boasted excellent handling characteristics to match its turn of speed. The A-model Fw 190s were the dedicated fighter variants of the 'butcher bird', and as the design matured, so more guns were fitted and more power squeezed out of the BMW engine.

By the end of 1942, production of the Fw 190 accounted for half of all German fighters built that year, and the fighter-bomber F/G had also been developed – the first F-models entered frontline service on the Eastern Front during the winter of 1942–43. All manner of ordnance from bombs to rockets could be carried by the fighter-bomber Fw 190, and additional protective armour for the pilot was also added around the

cockpit. Variants of the Fw 190 saw action against the Allies on all fronts of the war in Europe, as well as in North Africa. The A-8 series of dedicated heavy bomber 'destroyers' (delivered from early 1944) were particularly effective, being armed with 30mm cannon and underwing rocket-propelled mortars. They also had improved windscreen and cockpit armour. The radial-engined Fw 190, of which 19,379 examples were built, remained a deadly opponent for Allied fighter pilots through to war's end.

FIGHTER DETAILS



Fw 190A-3 'White 7' of Oberleutnant Robert Olejnik, *Staffelkapitän* 4./JG 1, Woensdrecht, the Netherlands, June 1942

'White 7' features the distinctive Alpine folklore-inspired '*Tatzelwurm*' emblem of 4. *Staffel*. Knight's Cross holder Olejnik had joined the Luftwaffe in 1935, and he subsequently saw a career that would culminate in him commanding the Me 163 rocket interceptor-equipped I./JG 400 in late 1944. Credited with 41 victories during 680 missions, Olejnik claimed most of his aerial successes with I./JG 3 on the Eastern Front in 1941.



Fw 190A-8/R2 'Double Chevron' of Hauptmann Wilhelm Moritz, *Stab IV.[Sturm]*/JG 3, Memmingen, Germany, July 1944

This aircraft was one of at least two heavily armed, and armoured, Fw 190A-8/R2s flown by ace Wilhelm Moritz in 1944. Aside from its command double chevrons, the fighter featured a white fuselage band with a black wavy *Gruppe* line. It also had an all-black forward cowl, aft of which was a stylized eagle's 'wing', armoured glass cockpit panels and cockpit side armour. A veteran of more than 500 missions, Moritz was credited with 44 victories, including 12 highly prized four-engined bombers.

FOCKE-WULF Fw 190D-9

SPECIFICATIONS (Fw 190D-9)

Crew: Pilot

Length: 33ft 5.25in (10.19m)

Wingspan: 34ft 5.5in (10.50m)

Height: 11ft 0.25in (3.36m)

Empty: 7,964lb (3,612kg)

Max T/O: 10,670lb (4,840kg)

Max Speed: 426mph (685km/h)

Range: 520 miles (837km)

Powerplant: Junkers Jumo 213E (with MW50 water/methanol boost)

Output: 2,022hp (1,508kW)

Armament: Two 13mm machine guns in nose; two 20mm cannon in wings; one 1,100lb (500kg) bomb under fuselage

First Flight Date: March 1942

Developed in 1942 as a replacement for the aborted Fw 190B/C high-altitude fighters, the *Langnasen-Dora* ('Longnose-Dora') made use of the exceptional inverted inline Junkers Jumo 213 engine, combined with an MW50 water/ methanol booster, to achieve an impressive rate of climb and outstanding top speed. These were both crucial ingredients for a Defence of the Reich fighter charged with intercepting high-flying Allied bombers, and fending off their escorts. In total contrast to the many models and sub-variants of the Fw 190A/F/G, only the D-9 version of the 'Dora' was produced in large numbers.

Service entry was achieved in August 1944, and the first fighters to reach the *Jagdwaaffe* were employed as Me 262 airfield defenders. A number of D-9s participated in the last-ditch *Bodenplatte* operation staged at dawn on New Year's Day 1945 against numerous Allied airfields in western Europe. The survivors of this mission were later absorbed within the Defence of the Reich force. In February 1945

production commenced on the D-12, which was equipped with an uprated Jumo 213F-1 engine, a 30mm cannon firing through the nose and better protective armour for the pilot, but only a handful were built before Germany capitulated in May 1945. Just 674 Fw 190Ds had been constructed by the end of the war.

FIGHTER DETAILS



Fw 190D-9 'Yellow 11' of II./JG 2, Stockheim, Germany, March 1945

This aircraft was one of a number of 'Dora 9s' assigned to II./JG 2 in the early weeks of 1945, the 'long-nose' aircraft fully equipping the *Jagdgeschwader* after II. *Gruppe*'s extended spell with the Bf 109G. The aircraft had yellow-white-yellow (note how the break in the white band was used to create a II. *Gruppe* horizontal bar) Defence of the Reich bands. JG 2 had only 16 airworthy Fw 190D-9s by mid-April 1945, with nine more grounded due to a lack of spare parts.



Fw 190D-9 'Green 7' of Feldwebel Hubert Drdla, 13. [Sturm]/JG 3 'Udet', Prenzlau, Germany, April 1945

'Green 7' was among IV./JG 3's final complement of Fw 190D-9s, the fighter having been routinely

flown by Feldwebel Hubert Drdla shortly before his transfer to Me 262-equipped JG 7 as the war neared its end. Drdla claimed no victories with the Me 262, all 18 of his recorded kills (six against the Western allies and 12 in the East) having been gained as a member of IV.(*Sturm*)/JG 3 'Udet' in 1944–45 while flying the Fw 190.

FOCKE-WULF Ta 152

SPECIFICATIONS (Ta 152H)

Crew: Pilot

Length: 35ft 1.5in (10.71m)

Wingspan: 47ft 4.5in (14.44m)

Height: 11ft 1in (3.38m)

Empty: 8,887lb (4,031kg)

Max T/O: 11,502lb (5,217kg)

Max Speed: 465mph (748km/h)

Range: 1,250 miles (2,011km) with external tanks

Powerplant: Junkers Jumo 213E (with MW50 water/methanol boost)

Output: 2,022hp (1,508kW)

Armament: One 30mm cannon in propeller hub and two 20mm cannon in wings

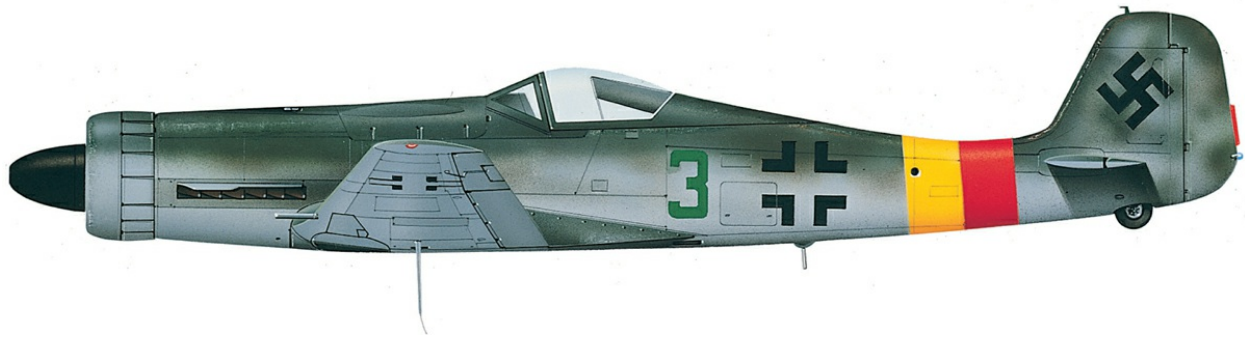
First Flight Date: November 1944

Undoubtedly the ultimate piston-engined German fighter to attain series production in World War II, the Ta 152 was also the final extrapolation of the Fw 190 family first devised by Dr Kurt Tank in the late 1930s. The Ta 152 was the result of the Luftwaffe's desperate need for faster fighters with a better performance at high altitude, and the initial development stages of the aircraft (A- and B-models) saw the Junkers Jumo 213E engine combined with a pressurized cockpit and new wing centre section, married to the outer wings and lengthened rear fuselage of an Fw 190A-8. The Ta 152C introduced the boosted Daimler-Benz DB 603LA into the airframe, but only a handful had been built when the definitive Ta 152H was unveiled, again fitted with the Jumo 213E and a drastically increased wingspan. Production commenced in November 1944, and a handful of aircraft were issued to *Erprobungskommando* (Service Trials unit) Ta 152 shortly thereafter.

Those Ta 152Hs that did eventually engage the enemy were allocated exclusively to *Stabstaffel* JG 301, which never had more than 15 examples

on strength at any one time. The aircraft were principally used to escort fighter-bombers targeting the Red Army in the Battle of Berlin, rather than performing their designed role of high-altitude USAAF heavy bomber interception. It is believed that just seven or eight victories were credited to the Ta 152 for the loss of four examples in return. Approximately 200 Ta 152H-1s had been built by the time the Cottbus factory was captured by invading Soviet forces in the early spring of 1945.

FIGHTER DETAILS



Ta 152H 'Green 3' of Oberfeldwebel Josef Keil, *Geschwaderstab* JG 301, Altenau, Germany, April 1945

Geschwaderstab 301 was the only frontline Luftwaffe unit to be equipped with the Ta 152, and Oberfeldwebel Josef Keil was the only pilot to achieve 'acedom' with it. Exactly half of his ten victories were claimed in the aircraft on both the Western and Eastern Fronts during the final five weeks of hostilities.



Ta 152H 'Green 9' of Oberfeldwebel Willi Reschke, *Geschwaderstab* JG 301, Neustadt-Glewe, Germany, April 1945

Oberfeldwebel Willi Reschke had already claimed 20 victories (14 of them bombers) over

southern Germany and Hungary during the high summer of 1944 prior to being transferred to the *Geschwaderstab* of JG 301 in early 1945. There are no known heavy bomber kills by Ta 152 pilots, but Reschke was able to claim three Allied fighters destroyed – a Royal New Zealand Air Force Tempest V south of Schwerin on 14 April 1945 and a brace of Soviet Yak-9s over Berlin two days later.

FOCKE-WULF Ta 154

SPECIFICATIONS (Ta 154A-0)

Crew: Pilot and radar operator

Length: 41ft 3in (12.57m)

Wingspan: 52ft 6in (16.00m)

Height: 11ft 10in (3.61m)

Empty: 13,933lb (6,320kg)

Max T/O: 19,842lb (9,000kg)

Max Speed: 399mph (642km/h)

Range: 1,156 miles (1,860km) with external tanks

Powerplants: two Junkers Jumo 213E engines

Output: 3,500hp (2,610kW)

Armament: two 30mm cannon and two 20mm cannon in the nose

First Flight Date: 7 July 1943

Dubbed 'Moskito' by the Germans due to its wooden construction, the Ta 154 enjoyed far less success than its British namesake. With an airframe built of plywood (bar the framing for the pressurized cockpit, which was made of metal) in an effort to preserve strategic materials, the Ta 154 was designed by Dr Kurt Tank in response to a 1942 requirement issued by the Luftwaffe for a specialized night and all-weather fighter. An initial order of 250 was placed with Focke-Wulf in November 1943, and various woodworking firms in eastern Germany and Poland were contracted to work on the 'Moskito'.

With a planned maximum production rate of 500 aircraft per month, the Ta 154 had all the appearances of being an important weapon for the *Nachtjagd* as it took the fight to RAF Bomber Command over Germany. However, the disintegration of the first- and second-production Ta 154A-1s during high-speed pre-delivery runs in July 1944 cast doubts over the quality of manufacture and the project was immediately halted. A subsequent investigation found that acid levels in the plywood glue used

in place of the Tego-Film phenolic resin adhesive that had been used to bond the wood in the pre-prototype aircraft were too high, corroding the joints. The factory producing the vastly superior Tego-Film had been destroyed by the RAF just as series production of the Ta 154 was about to commence, hence the use of the inferior adhesive.

Tank was forced to halt production shortly after the fatal crashes, and the *Reichsluftfahrtministerium* (Ministry of Aviation) cancelled the entire project in September 1944. Approximately 50 production aircraft had been completed by then, and a small number of the 18 pre-production Ta 154s were also upgraded to production standard. A handful of 'Moskitos' flew operationally with *Nachtjagdgeschwader* (NJG) 3, and others found limited use as trainers.

FIGHTER DETAILS



Ta 154 V3 of the *Erprobungsstelle* Rechlin, Rechlin-Lärz, Germany, early 1944

The third Ta 154 prototype completed by Focke-Wulf, this aircraft (V3) was the first example fitted with weaponry and powered by Jumo 211R engines. The added weight of the cannon and the drag of the 32-dipole element *Matratze* antennas used by the FuG 212 *Lichtenstein* C-1 radar unit reduced the aircraft's top speed by 46mph (75km/h), although the fighter was still faster than the He 219. The remaining 15 prototypes were all completed in an identical fashion to the V3.



Ta 154A-0 Wk-Nr. 100015 of the *Erprobungsstelle* Rechlin, Rechlin-Lärz, Germany, 1944

This aircraft was one of 15 Ta 154A-0s delivered to *Erprobungsstelle* Rechlin during early 1944, the aircraft being fitted with armament and FuG 220 *Lichtenstein* SN-2 radar. Some of these aircraft were operationally tested by a number of frontline *Nachtjagd* units, including NJGr 10.

FOKKER D.XXI

SPECIFICATIONS (MERCURY-ENGINED D.XXI)

Crew: Pilot

Length: 26ft 11in (8.20m)

Wingspan: 36ft 1in (11.00m)

Height: 9ft 8in (2.95m)

Empty: 3,197lb (1,450kg)

Max T/O: 4,519lb (2,050kg)

Max Speed: 286mph (460km/h)

Range: 578 miles (930km)

Powerplant: Bristol Mercury VII/VIII

Output: 830hp (619kW)

Armament: Four 7.7mm or 7.9mm machine guns in wings, or two 7.9mm machine guns and two 20mm cannon in wings

First Flight Date: 27 March 1936

The last single-engined fighter to carry the famous Fokker name, the D.XXI was a modest fixed undercarriage monoplane machine that was effectively obsolete by the outbreak of World War II. Built in small numbers (fewer than 150 were completed), and only used by three air arms, the D.XXI nevertheless acquitted itself well in Dutch hands before being totally overwhelmed during the May 1940 *Blitzkrieg* – as many as 40 Ju 52/3m transports and a handful of Bf 109Es were credited to the brave Dutch fighter pilots in five days of conflict, although they too suffered horrific casualties in the process.

The first D.XXIs had been ordered to fill a requirement expressed by the Netherlands East Indies Air Service (which never actually acquired the fighter) in the mid-1930s, and they entered Dutch service in the Netherlands in early 1938. Licence-built examples were also produced concurrently by Valtion Lentokonetehtä (State Aircraft Factory) in Finland, which eventually delivered 93 D.XXIs – 50 of them powered by

Pratt & Whitney Twin Wasp Junior radial engines acquired via Sweden – between 1939 and 1944.

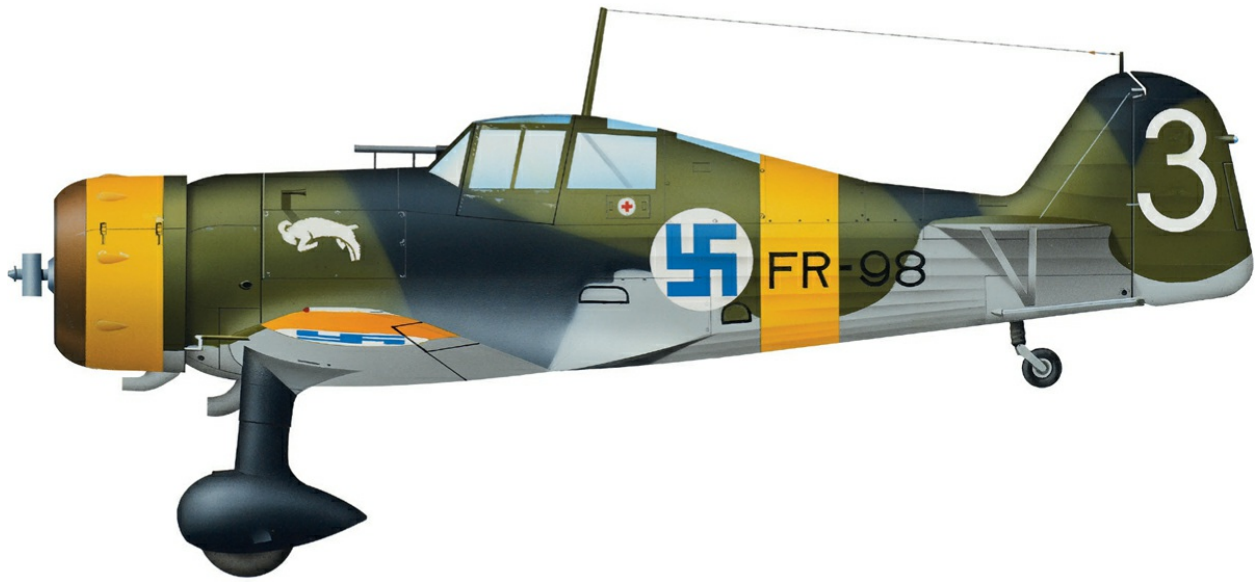
The final foreign user of the D.XXI was Denmark, which bought two directly from Fokker and built a further ten, all of them armed with a pair of 20mm Madsen cannon. Although the Danish examples saw little action during the German invasion in the spring of 1940, the Finnish D.XXIs inflicted heavy casualties on Soviet forces for much of World War II. Indeed, the final Finnish D.XXI was not retired from service until 1951.

FIGHTER DETAILS



D.XXI No 232 (construction number 5505) of Lt F L M Focquin de Grave, 1st JaVA, Eelde, the Netherlands, 13 September 1939

The D.XXI's baptism of fire occurred on 13 September 1939 when the Netherlands was still at peace. Following an incident in which a Dutch T.VIIIW seaplane was shot down off Schiermonnikoog Island, an alighted Luftwaffe Do 18 flying boat was strafed by 1st JaVA flight leader Lt Frans Focquin de Grave, flying No 232. Assigned to the 2nd JaVA in May 1940, No 232 was unserviceable when Germany invaded the Netherlands and it was captured intact by the Wehrmacht at Schiphol Airport.



D.XXI FR-98/'White 3' (construction number III/2) of Maj Auvo Maunula, E/LLv 12, Nurmoila, Finland, May 1942

FR-98 was a real 'ace aeroplane' of the Winter War, its pilots claiming six victories, five of them achieved by SSgt Lauri Nissinen of 5/LLv 24. After a period with LLv 32, it was transferred to reconnaissance squadron LLv 12 on 15 July 1941. Here, it was flown on several occasions by the squadron commander, Maj Maunula, who scored one of his three aerial victories in it on 19 February 1942 when he shot down a Soviet R-5 biplane.

GLOSTER GLADIATOR

SPECIFICATIONS (GLADIATOR I)

Crew: Pilot

Length: 27ft 5in (8.36m)

Wingspan: 32ft 3in (9.83m)

Height: 10ft 4in (3.15m)

Empty: 3,450lb (1,565kg)

Max T/O: 4,750lb (2,155kg)

Max Speed: 253mph (407km/h)

Range: 428 miles (689km)

Powerplant: Bristol Mercury IX

Output: 840hp (626kW)

Armament: Four 0.303in machine guns in nose and under wings

First Flight Date: 12 September 1934 (SS.37)

The last in the long line of British biplane fighters that stretched back to the Sopwith Pup of 1916, the Gladiator started life as a company private venture. Having produced almost 250 Gauntlets in the early 1930s to the previous Specification F.9/26, Gloster based its new SS.37 very much on this fighter, although by redesigning the wings as single bay units and 'cleaning up' the undercarriage to include internally sprung assemblies, it achieved a top speed of 253mph with the aircraft. The SS.37 was equipped with four 0.303in machine guns as specified by the RAF, but the fighter still very much embraced the 'old' technology of doped fabric over its wood and metal ribbed and stringered fuselage and wings.

However, with high-performance monoplane bombers in the development stage, the RAF was left with little choice but to accept the SS.37 as an interim machine to tide Fighter Command over until the proposed Hawker and Supermarine designs reached fruition later in the decade. Specification F.14/35 was quickly written around the SS.37 and a production order placed for the aircraft, christened the Gladiator. First

flown on 12 September 1934, the Gladiator I (231 of which were built) made its service debut with Nos 3 and 72 Sqns in January 1937, and went on to serve with a further 26 fighter units.

The Gladiator II was fitted with a Mercury VIIIA, which produced the same horsepower as the Mercury X used by the Mk I but with the addition of automatic mixture control, an electric starter and a Vokes air filter for service in the desert – 252 new-build Mk IIs were delivered, and a number of Mk Is upgraded. Sixty arrestor-hooked Sea Gladiators were also delivered to the Royal Navy, plus a further 165 Mk I/IIs for export customers. A considerable number of Gladiators were still in service with the RAF (and a handful of foreign air arms) when war broke out in September 1939, and they gave a good account of themselves in France, North and East Africa and the Mediterranean.

FIGHTER DETAILS



Gladiator I L8011 of Flt Lt MT StJ Pattle, No 80 Sqn, Amiriya, Egypt, early 1940

Part of a batch of 28, L8011 served with No 80 Sqn until it was eventually transferred to the Greeks. It was flown regularly by South African 'Pat' Pattle, whose first combat with the Italians took place near El Adem on 4 August 1940. He went on to become the RAF's leading scorer, with a total of around 50 victories – 15.5 of them in Gladiators.



Sea Gladiator N5517 of Cdr C L Keighly-Peach, 813 NAS Fighter Flight, HMS *Eagle*, Mediterranean Sea, July 1940

HMS *Eagle*'s fighter flight, which formed in June 1940 with four Sea Gladiators, was led by the ship's Commander (Flying), Cdr Charles Keighly-Peach. Under him the flight prospered over the succeeding weeks, destroying possibly as many as seven Italian bombers – 'K-P' got most of them. All of his five claims were made flying N5517.

GLOSTER METEOR I/III

SPECIFICATIONS (METEOR F I)

Crew: Pilot

Length: 41ft 3in (12.57m)

Wingspan: 43ft 0in (13.10m)

Height: 13ft 0in (3.96m)

Empty: 8,140lb (3,693kg)

Max T/O: 13,800lb (6,260kg)

Max Speed: 415mph (668km/h)

Range: 1,000 miles (1,610km)

Powerplants: two Rolls-Royce Welland I turbojet engines

Output: 3,400lb st (15.24kN)

Armament: Four 20mm cannon in nose

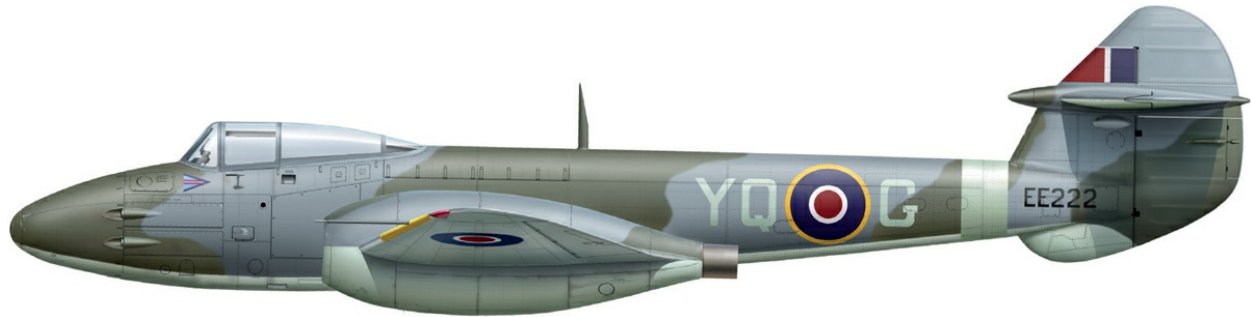
First Flight Date: 5 March 1943

The first (and only) Allied jet combat design to reach the frontline during World War II, the Meteor was initially handicapped (in F I form) because its large size and generous wing area had a detrimental affect on the modest power output of its original Welland engines (rated at a combined thrust of just 3,400lb st). However, these very design features came into their own following development work undertaken by Rolls-Royce, which resulted in the Meteor being matched up with the far better Derwent series of turbojet engines from the F III onwards.

Gloster built just 20 F Is from early January 1944, and these were issued to No 616 Sqn six months later. The unit's first taste of action with the jet came within weeks of the unit's arrival at RAF Manston, in Kent, when the aircraft's high speed was used to chase down and destroy a total of 13 V1 flying bombs. By the time No 616 Sqn moved to the Continent in early 1945, the unit had replaced its F Is with Derwent-engined F IIIs. These more powerful Meteors were put to effective use in ground-strafting missions in the final weeks of the conflict. Postwar, the

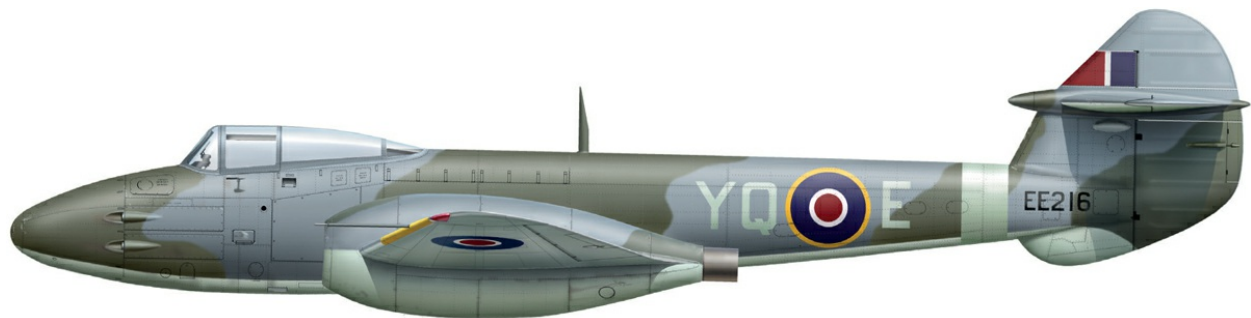
Meteor went on to become the RAF's staple dayfighter, plus serve as an effective radar-equipped nightfighter two-seat trainer. Many were also sold to foreign air forces, including the Royal Australian Air Force, whose No 77 Sqn flew Meteor F 8s in combat in the Korean War.

FIGHTER DETAILS



Meteor I EE222/YQ-G of Wg Cdr A McDowall, No 616 'South Yorkshire' Sqn, Manston, Kent, August 1944

No 616 Sqn gave the RAF's first jet fighter its combat debut during the anti-V1 campaign, the unit being led by Battle of Britain ace Wg Cdr Andrew McDowall – he had previously tested the Meteor with manufacturer Gloster. He adopted EE222 as his personal aircraft, to which was added his rank pennant. McDowall flew the fighter on operations until it suffered engine problems on take-off on 29 August and crash-landed 3 miles south of Manston. Although McDowall was uninjured, EE222 was badly damaged.



Meteor I EE216/YQ-E of Flg Off T D Dean, No 616 'South Yorkshire' Sqn, Manston, Kent, August 1944

On 4 August 1944 EE216 was used by Flg Off TD 'Dixie' Dean to claim the world's first jet-versus-jet victory. With his cannons jammed, Dean rolled the V1 onto its back with his wingtip, causing it to crash in farmland south of Tonbridge, Kent. Issued to No 616 Sqn in July 1944, EE216 was replaced by a Meteor III in early 1945. Used by No 1335 Conversion Unit to train Meteor pilots for frontline squadrons, the aircraft was sold for scrapping in January 1946.

GRUMMAN F4F WILDCAT

SPECIFICATIONS (F4F-4)

Crew: Pilot

Length: 28ft 9in (8.76m)

Wingspan: 38ft 0in (11.58m)

Height: 11ft 4in (3.45m)

Empty: 5,895lb (2,674kg)

Max T/O: 7,952lb (3,607kg)

Max Speed: 320mph (515km/h)

Range: 770 miles (1,239km)

Powerplant: Pratt & Whitney R-1830-76/86 Twin Wasp

Output: 1,200hp (895kW)

Armament: Six 0.50in machine guns in wings; provision for two 250lb (113kg) bombs under wings

First Flight Date: 2 September 1937

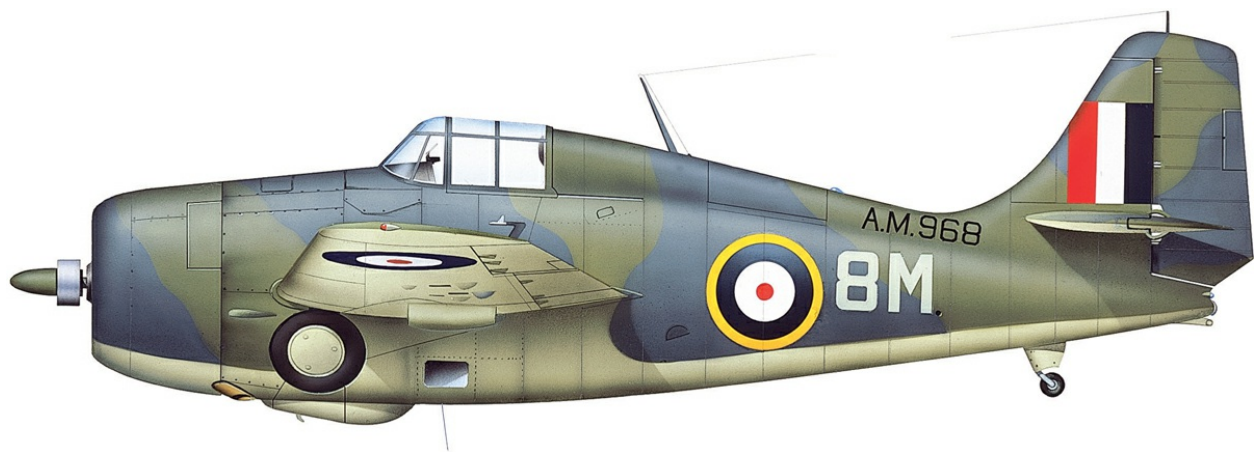
Derived from a biplane design (XF4F-1) offered in competition to the more modern Brewster F2A, the Wildcat was the result of a revised study into the feasibility of a monoplane naval fighter undertaken by Grumman in the summer of 1936. Designated the XF4F-2, the prototype lost out to the rival Brewster in the fly-off due to the latter fighter's superior handling qualities. However, Grumman reworked the design into the vastly superior XF4F-3, fitting a more powerful Pratt & Whitney Twin Wasp engine with a two-stage supercharger, increasing the fighter's wingspan and redesigning its tail surfaces.

The French *Aéronavale* provided Grumman with its first order for the fighter, committing to 81 aircraft (given the export designation G-36A) in early 1939. Following flight trials, the US Navy also ordered 78 examples in August 1939. These began entering service as F4F-3 Wildcats with VF-7 and VF-41 in December 1940, followed by VF-42, VF-71 and US Marine Corps squadrons VMF-121, VMF-211 and VMF-221 early the following year. By then Grumman had switched production to the F4F-4, which

incorporated lessons learned from the Royal Navy's combat experience with its ex-French G-36s (France had capitulated before they could be delivered), which it called Martlet Is. The F4F-4 had its armament boosted from four to six 0.50in guns, self-sealing tanks fitted and the inclusion of wing folding mechanisms. The Wildcat proved to be a worthy opponent for the A6M Zero-sen during the battles of Coral Sea and Midway in 1942, as well as in the stubborn defence of Guadalcanal.

By 1943 General Motors (GM) had commenced building F4F-4s, which it redesignated FM-1s. Later that year GM switched production to the FM-2, which utilized a turbocharged Wright R-1820-56 Cyclone in place of the Twin Wasp. This swap made for an improved top speed and an optimum altitude 50 per cent higher than that of the FM-1. Although replaced in larger fleet 'flat tops' by the F6F Hellcat, the Wildcat served on until VJ Day aboard escort carriers.

FIGHTER DETAILS



Martlet II AM968 of Sub Lt J A Cotching, 806 NAS, HMS *Indomitable*, Mediterranean Sea, August 1942

With a total of two and two shared victories, Sub Lt John Cotching was the Royal Navy's most successful Martlet pilot. On the morning of 12 August 1942, during the crucial *Pedestal* convoy, he attacked a formation of S.79 torpedo-bombers in AM968 and set one on fire before he ran out of ammunition – it was later confirmed as his first victory. Later that same day, Cotching again launched in AM968 and engaged the escorts for a Stuka attack, downing an Re.2001 fighter.



F4F-4 Wildcat BuNo 11762/black 9-F-15 of Ens Louis Menard, VF-9, USS *Ranger* (CV-4), Mediterranean Sea, November 1942

To avoid misidentification during the North African invasion in November 1942, a yellow surround was added to the national insignia on the fuselage and beneath the wings of USAAF and US Navy aircraft involved in the operation. Future ace Ens Louis Menard was flying this aircraft when he destroyed a Vichy French Hawk 75A and claimed a second one as a probable near Fedala on 9 November. He was one of the few US Navy pilots with claims against two Axis air forces.

GRUMMAN F6F HELLCAT

SPECIFICATIONS (F6F-3)

Crew: Pilot

Length: 33ft 4in (10.16m)

Wingspan: 42ft 10in (13.06m)

Height: 14ft 5in (4.40m)

Empty: 9,042lb (4,101kg)

Max T/O: 13,228lb (6,000kg)

Max Speed: 376mph (605km/h)

Range: 1,085 miles (1,746km)

Powerplant: Pratt & Whitney R-2800-10W Double Wasp

Output: 2,000hp (1,491kW)

Armament: Six 0.50in machine guns in wings; provision for six rockets under wings or 2,000lb (907kg) bombs under centre section

First Flight Date: 26 June 1942

The Hellcat was always destined to be a success, as it embodied the early lessons learnt by users of Grumman's previous fleet fighter, the F4F Wildcat, in the Pacific, as well as general pointers from the RAF's experience in Europe. The original design for the Hellcat dated back to late 1940, and the US Navy placed an advance order for the fighter in June 1941. Modifications to the 'paper' aircraft in light of combat experience from the Battle of the Coral Sea in May 1942 saw Grumman lower the wing centre section to enable the undercarriage to be wider splayed, the fitment of more armour-plating around the cockpit to protect the pilot and an increase in the fighter's ammunition capacity for its six 0.50in machine guns.

Less than a year after the US Navy placed its order, the prototype XF6F-1 made its first flight. Grumman soon realized that a more powerful engine was needed to give the fighter a combat edge, so a Pratt & Whitney R-2800-10 was installed, resulting in the F-1 being

redesignated F-3. Rushed into production following successful testing of the re-engined prototype, the F6F-3 made its combat debut with VF-5 on board USS *Yorktown* (CV-10) in August 1943. The Hellcat subsequently flew from most fleet carriers in varying numbers, and was credited with the destruction of 4,947 aircraft up to VJ Day.

Amazingly, only four major variants of the Hellcat were produced – the -3, of which 4,423 were constructed between October 1942 and April 1944, the improved -5 dayfighter and the specialized -3N and -5N nightfighters. By the time the last Hellcat was delivered in November 1945, 12,275 had been built. The Royal Navy's Fleet Air Arm was also a great believer in the Hellcat, procuring almost 1,200 of them between 1943 and 1945. Post-war, the aircraft saw extensive service with the US Navy Reserve and training units, while surplus Hellcats were converted into pilotless F6F-3/5K target drones for missile testing.

FIGHTER DETAILS



F6F-3N Hellcat BuNo 42158 of Lt R L Reiserer, VF(N)-76 Det 2, USS *Hornet* (CV-12), western Pacific, July 1944

Equipped with an AN/APG-6 air-intercept radar in a fairing on the starboard outer wing, the F6F-3N nightfighter was an exceptional, and rare (only around 200 were built), aircraft. This example was flown by US Navy ace Lt Russell Reiserer of VF(N)-76, a specialized nightfighter squadron that was credited with 37 confirmed victories within a seven-month period. During this time the squadron served on three different carriers. Reiserer was the unit's top-scoring pilot, with eight victories scored during the day and at night.



Hellcat II FN439 of Lt K A McLennan, 1844 NAS, HMS *Indomitable*, Indian Ocean, January 1945

New Zealander Keith McLennan joined Hellcat-equipped 1844 NAS after completing his flying training, and duly took part in operations in the Indian Ocean in 1944–45. On 29 January McLennan was on deck alert in FN439 when seven Ki-21 'Sally' and Ki-48 'Lily' bombers of the 'Shichisi Mitate' Special Attack Corps attempted to make low-level suicide strikes on the fleet. Hastily launched, he destroyed two Ki-21s and shared a third with a Seafire, as all seven bombers were downed.

HAWKER HURRICANE

SPECIFICATIONS (HURRICANE I)

Crew: Pilot

Length: 31ft 5in (9.58m)

Wingspan: 40ft 0in (12.19m)

Height: 13ft 0in (3.96m)

Empty: 4,982lb (2,260kg)

Max T/O: 7,490lb (3,397kg)

Max Speed: 324mph (521km/h)

Range: 600 miles (965km)

Powerplant: Rolls-Royce Merlin II/III

Output: 1,030hp (768kW)

Armament: Eight 0.303in machine guns in wings

First Flight Date: 6 November 1935

The Hurricane's arrival in the frontline in December 1937 saw the RAF finally make the jump from biplane to monoplane fighters. The aircraft owed much to Hawker's final biplane fighter design, the Fury, both types being built around an internal 'skeleton' of four wire-braced alloy and steel tube longerons. The Hurricane also benefited from Hawker's longstanding partnership with Rolls-Royce, whose Merlin I engine proved to be the ideal powerplant. Armed with eight 0.303in machine guns and capable of speeds in excess of 300mph, the Hurricane I was the world's most advanced fighter when the RAF took delivery of its first examples in December 1937.

Technically eclipsed by the Spitfire by mid-1940, Hurricanes nevertheless outnumbered the former during the Battle of Britain by three-to-one, and downed more Luftwaffe aircraft. Even prior to its 'finest hour', Hurricanes provided the first RAF aces of the war in France during the *Blitzkrieg*. In 1940-41 the Mk I fought in the Mediterranean and North Africa. Finally, in 1942, tropicalized Hurricane Is attempted to

halt the Japanese invasion of the Far East, fighting over Singapore, Malaya, Burma and Java.

On 11 June 1940 a Hurricane I was flown with a two-stage supercharged Merlin XX engine. Designated the Hurricane II, deliveries of the machine to frontline units commenced in September of that year. With fuselage strengthening allowing the fitment of wings featuring universal attachment points for external stores (bombs, rockets and drop tanks), the 12-gun Mk IIB was produced from late 1940. The following year the four 20mm cannon Mk IIC made its service debut. Although deemed obsolescent for the dayfighter role in Britain, the Hurricane II served as a fighter-bomber and night intruder on the Channel Front into 1943. In other theatres, the Hurricane was the most modern fighter available to the Allies. Although production of the aircraft ceased in September 1944, the Hurricane remained in frontline service in the Far East until VJ Day.

FIGHTER DETAILS



Hurricane I V7203 of Sub Lt R E Gardner, No 242 Sqn, Coltishall, Norfolk, July 1940

One of the Royal Navy pilots lent to the RAF in 1940, Sub Lt 'Jimmie' Gardner became an ace in mid-September, having taken part in the heavy fighting with No 242 Sqn in the intervening period. Although he made no claims in this aircraft, Gardner did fly it often from mid-July. RAF ace Flg Off John Latta was lost in V7203 during No 242 Sqn's first 'Circus' operation to France on 10 January 1941.



Hurricane I Z4932 of Sub Lt M F Fell, 806 NAS/Royal Navy Fighter Squadron, LG123 Maddalena, Libya, 1 December 1941

In late 1941 Sub Lt Mike Fell was part of the RN fighter squadron flying RAF Hurricanes on shipping protection duties in the Western Desert. On 1 December 1941, 806 NAS engaged Ju 88s and their escorts, and the pilots claimed a bomber and three fighters destroyed. Fell was flying this aircraft during the engagement. He first flew Z4932, which bore the name *Kiwi*, on 21 September, and regularly sortied in it until year-end. The aircraft was downed near Martuba on 15 January 1942.

HAWKER SEA HURRICANE

SPECIFICATIONS (SEA HURRICANE IIC)

Crew: Pilot

Length: 32ft 3in (9.83m)

Wingspan: 40ft 0in (12.19m)

Height: 13ft 3in (4.04m)

Empty: 5,800lb (2,631kg)

Max T/O: 7,800lb (3,538kg)

Max Speed: 322mph (518km/h)

Range: 460 miles (740km)

Powerplant: Rolls-Royce Merlin XX

Output: 1,460hp (1,089kW)

Armament: Four 20mm cannon in wings

First Flight Date: early 1941

Despite the RAF's No 46 Sqn proving that the Hurricane could indeed take-off and land from a carrier during the ill-fated Norwegian campaign of April 1940, the first dedicated Sea Hurricanes did not finally see their first operations until early 1941. Initially developed to counter the threat posed to Atlantic convoys by long-range Fw 200 Condors, 50 'Hurricats' were converted for use from Catapult Armed Merchant Ships, and once launched, they either had to land ashore or ditch into the sea upon the completion of their mission.

The pressing need for more modern fighters for the conventional Fleet Air Arm also resulted in a number of ex-RAF aircraft being converted into Sea Hurricane IBs at around the same time, the standard land-based airframe being fitted with a catapult spool and arrestor hook – little other modifications were carried out. Later variants featured the engine and airframe of the Mk I combined with the Mk IIC's cannon armament, while the final naval Sea Hurricane (the Mk IIC) was identical to its RAF equivalent, featuring the four 20mm cannon wing and Merlin XX engine.

Sea Hurricanes equipped 38 Fleet Air Arm units between 1941 and 1944, and engaged enemy aircraft in the Mediterranean and Arctic seas from the decks of fleet and escort carriers, as well as from land bases on Malta and along the North African coast.

FIGHTER DETAILS



Sea Hurricane IB W9220 of Sub Lt R J Cork, 880 NAS, Arbroath, Scotland, and St Merryn, Cornwall, March–July 1941

880 NAS received both Hurricanes and Sea Hurricanes in early 1941, and among the latter was this aircraft – one of the first Sea Hurricanes delivered to the Royal Navy. Battle of Britain ace Dickie Cork first flew it on 7 April, and he continued to do so regularly during 880 NAS's workup training through the spring and summer. Indeed, in early July it was his mount for a sustained period of air-to-air firing training.



Sea Hurricane IIB JS355 of Lt Cdr J M Bruen, 800 NAS, HMS *Biter*, Mediterranean Sea, 8 November 1943

Lt Cdr 'Bill' Bruen's 800 NAS had the roundels on its Sea Hurricanes overpainted with US stars on the eve of Operation *Torch* so as to give the impression of an American-only invasion. Bruen launched before dawn, leading part of the escort for Royal Navy Albacores sent to dive-bomb La Senia airfield, in Oran. Approaching the target, the biplanes were attacked by Vichy D.520s, and

Bruen (in JS355) fired at one of them and shot it down for his eighth victory.

HAWKER TYPHOON

SPECIFICATIONS (TYPHOON IB)

Crew: Pilot

Length: 31ft 11in (9.73m)

Wingspan: 41ft 7in (12.67m)

Height: 15ft 3.5in (4.66m)

Empty: 9,800lb (4,445kg)

Max T/O: 13,980lb (6,341kg)

Max Speed: 405mph (652km/h)

Range: 980 miles (1,577km) with external tanks

Powerplant: Napier Sabre IIA

Output: 2,180hp (1,626kW)

Armament: Four 20mm cannon in wings; provision for two 500lb (227kg) or 1,000lb (454kg) bombs or eight 3in/60lb (7.62cm/27kg) rockets under wings

First Flight Date: 24 February 1940

The Typhoon was the first fighter to enter RAF service capable of achieving speeds in excess of 400mph in level flight. However, the aircraft was almost deemed a failure at the start of its career when the combination of a poor rate of climb and performance at altitude, unreliability of its new Napier Sabre (chosen over the cancelled Rolls-Royce Vulture engine fitted to the near-identical Hawker Tornado) and suspect rear fuselage assembly cast serious doubts over its suitability for frontline service. Refusing to give up on the design, Hawker and Napier spent more than a year (from mid-1941 through to mid-1942) 'beefing up' the airframe and correcting engine maladies to the point where the Typhoon was found to be an excellent low-altitude fighter. Pilots flying the aircraft claimed 246 victories as they blunted the Luftwaffe's Fw 190 'hit and run' raiders, who frequently terrorized the south coast of England in 1942-43.

Its proven ability at low level also made the Typhoon the RAF's chosen

heavyweight fighter-bomber to support the British and Canadian armies during the invasion of Northwest Europe. Indeed, the 20 squadrons equipped with the aircraft in the 2nd Tactical Air Force (TAF) should appear in any list of 'war-winners'. They introduced the large-scale use of the rocket projectile to land battles, helped neutralize the German radar defence systems prior to D-Day, made the key intervention in defeating the almost-successful German counter-attack at Mortain in August 1944 and undertook pinpoint attacks on enemy headquarters that crippled the Wehrmacht's ability to respond at key periods in 1944–45. These battles were by no means one-sided, however, with highly effective German flak units exacting a terrible toll on 2nd TAF units from June 1944 through to war's end. Indeed, some 400 Typhoons and 150 pilots were lost during the Normandy campaign alone.

Of the 3,330 Typhoons delivered to the RAF between July 1941 and November 1945, all bar 15 of them were constructed by Gloster. Surviving examples were quickly replaced by Spitfires and Tempest Vs post-war.

FIGHTER DETAILS



Typhoon IA R7648 of Sqn Ldr H S L Dundas, No 56 Sqn, Duxford, Cambridgeshire, June 1942

This Typhoon was the fourth of Sqn Ldr Dundas' personal aircraft to carry the name 'Farquhar'.

Delivered to No 56 Sqn in early April 1942 and assigned to the CO, the aircraft was flown by Dundas on the unit's first defensive patrols with the Typhoon while commanding a detachment at Westhampnett, West Sussex, in June 1942 aimed at negating the Luftwaffe's 'Tip and Run' raids on the south coast. R7648 was replaced the following month by Typhoon IB R7825.



Typhoon IB MN570 of Wg Cdr REP Brooker, No 123 Wing, Thorney Island, West Sussex, June 1944

Issued to No 198 Sqn shortly before D-Day, MN570 was adopted by No 123 Wing CO Wg Cdr Brooker for his personal use, carrying his single initial 'B'. Damaged in a landing accident on 24 July, MN570 was repaired and reissued first to No 247 Sqn in November 1944, and then to No 174 Sqn the following month. It was destroyed in a crash-landing at Volkel, in the Netherlands, after being hit by flak on 22 February 1945.

HAWKER TEMPEST V

SPECIFICATIONS (TEMPEST V)

Crew: Pilot

Length: 33ft 8in (10.26m)

Wingspan: 41ft 0in (12.50m)

Height: 16ft 1in (4.90m)

Empty: 9,250lb (4,196kg)

Max T/O: 13,640lb (6,187kg)

Max Speed: 416mph (669km/h)

Range: 1,530 miles (2,462km) with external tanks

Powerplant: Napier Sabre IIA **Output:** 2,180hp (1,626kW)

Armament: Four 20mm cannon in wings; provision for two 1,000lb (454kg) bombs or eight 3in/60lb (7.62cm/27kg) rockets under wings

First Flight Date: 2 September 1942

Based closely on the Typhoon, the Tempest V was actually designated the Typhoon II early in its development phase. The most obvious difference between the two designs was the adoption of a thin, elliptical, laminar-flow, wing on the Tempest, which replaced the thick-chord flying surface of the earlier design – the ‘thick’ wing created serious compressibility problems for the Typhoon at high speeds throughout its career. Due to the fitment of the new ‘thin’ wing, the fuel tanks previously housed in the wings had to moved into the fuselage, resulting in the latter being lengthened by two feet. A dorsal fin was also added to the fuselage. Although several versions of the Tempest were planned by Hawker, only the Sabreengined Mk V was completed in time to see service with the RAF prior to war’s end.

The first production-standard aircraft flew in June 1943, and the first operational wing was formed in April 1944. By VE Day 11 squadrons within Fighter Command were equipped with Tempest Vs. Early aircraft suffered from engine reliability problems caused by overspeeding

propellers, but once this was rectified, the Tempest V continued the Typhoon's tradition in the low-level fighter-bomber role. Unlike its predecessor, the Tempest V also proved to be effective at medium to high altitudes too, and aside from downing 638 V1s, it was also credited with the destruction of a number of Me 262 jet fighters. Post-war, the Mk V was supplanted by the Bristol Centaurusengined Tempest II.

FIGHTER DETAILS



Tempest V JN862 of Flt Lt R Van Lierde, No 3 Sqn, Newchurch, Kent, June 1944

Remy Van Lierde followed a very successful tour on Typhoons with a posting to No 3 Sqn as a flight commander, flying Tempest Vs. In the summer of 1944 he became the most successful pilot, by day, against V1 flying bombs, claiming 44 destroyed. Most of his claims were made while flying his personal aircraft, JN862, which had three narrow bands at the tip of its spinner – these are believed to have been the Belgian national colours.



Tempest V SN129 of Sqn Ldr C J Sheddin, No 486 Sqn, Fassberg (B152), Germany, May 1945

SN129 carries the pennant and scoreboard of Jimmy Sheddin, No 486 Sqn's last wartime CO. The aircraft reached the unit on 13 March 1945, and between 10 April and 2 May four pilots claimed

six victories with it – four Fw 190s and an unidentified four-engined flying boat. Flown by Nos 41 and 26 Sqns post-war, SN129 was sent to No 20 Maintenance Unit at Aston Down, Gloucestershire, for storage in April 1946 and sold to manufacturer Hawker for parts reclamation in November 1950.

HEINKEL He 219

SPECIFICATIONS (He 219A-2)

Crew: Pilot and radar operator

Length: 50ft 11.75in (15.54m)

Wingspan: 60ft 8in (18.49m)

Height: 13ft 5.5in (4.10m)

Empty: 24,692lb (11,200kg)

Max T/O: 33,730lb (15,300kg)

Max Speed: 416mph (669km/h)

Range: 1,243 miles (2,000km)

Powerplants: two Daimler-Benz DB 603E engines

Output: 3,800hp (2,834kW)

Armament: Two 30mm cannon in wing roots; two 30mm and two 20mm cannon in ventral tray; two upward-firing 30mm cannon in rear fuselage

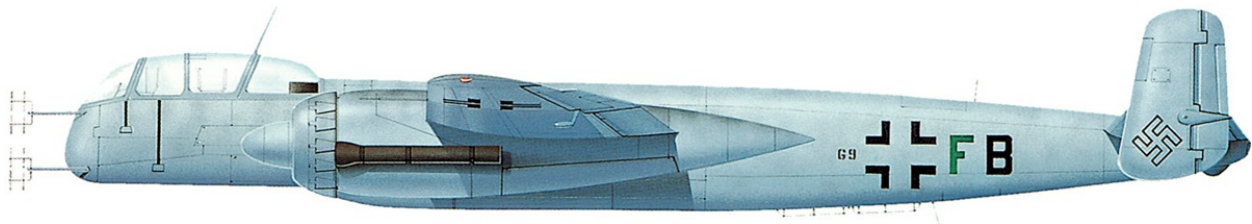
First Flight Date: 15 November 1942

The best piston-engined nightfighter to attain series production in Germany, the Uhu (Owl) was fitted with the deadly combination of advanced airborne radar and fearsome cannon armament – the latter including the oblique, upward-firing, *Schräge Musik* (literally ‘slanted music’) 30mm cannon installation in the rear fuselage of the large fighter. The He 219 was developed privately by Heinkel independent of any official interest from the Luftwaffe, and the aircraft’s significance became increasingly apparent as RAF Bomber Command stepped up the tempo of its nocturnal raids on Germany in 1941–42. The prototype Uhu immediately impressed with its speed and manoeuvrability during the aircraft’s first flight in November 1942, and by May 1943 a special trials unit had started flying pre-production He 219A-0s in combat from a base in the Netherlands. During the Heinkel’s first six sorties, 20 RAF bombers were destroyed, including six previously elusive Mosquitos.

Full-production A-2s began reaching frontline units in early 1944, and

the Uhu soon developed into a specialist Mosquito 'destroyer'. Just when it looked like the *Nachtjagd* was at last on the verge of receiving a dedicated nightfighter, rather than a converted dayfighter or bomber, production of the He 219A-7 was terminated in May 1944 by senior Luftwaffe personnel in favour of the unsuccessful Ta 154 and Ju 388J. Rapidly reinstated following the failure of the latter types, He 219 production never recovered from this setback – only 294 Uhu were ultimately built.

FIGHTER DETAILS



He 219 V9 Wk-Nr. 190009 G9+FB of Major Werner Streib, *Gruppenkommandeur* Stab/NJG 1, Venlo, the Netherlands, June 1943

As *Gruppenkommandeur* of NJG 1 at Venlo in June 1943, Streib was directed to form a small sub-unit to prove the He 219 in combat. This was the aircraft that he used to fly the type's initial combat sortie on 11/12 June, the fighter being destroyed in a crash-landing after Streib had downed five bombers (four Halifaxes and a Lancaster) raiding Düsseldorf. Misjudging his speed on landing, he slammed onto the runway, ripping off the starboard engine and cockpit section.



He 219A-2 Wk-Nr. 290126 D5+BL of 3./NJG 3, Grove, Denmark, May 1945

Equipped with FuG 220 radar in the nose, this aircraft was one of a number of He 219As surrendered to the British by I./NJG 3 at Grove shortly after VE Day. It was subsequently flown to Farnborough, along with two other examples, in August 1945 for evaluation by the Royal Aircraft Establishment. The fighter was soon placed in storage and eventually scrapped.

HEINKEL He 162

SPECIFICATIONS

Crew: Pilot

Length: 29ft 8.5in (9.05m)

Wingspan: 23ft 7.25in (7.21m)

Height: 8ft 6in (2.59m)

Empty: 4,796lb (2,175kg)

Max T/O: 5,940lb (2,694kg)

Max Speed: 490mph (788km/h)

Range: 410 miles (660km)

Powerplant: BMW 003E-1/2

Output: 1,764lb st (7.9kN)

Armament: Two 30mm or two 20mm cannon in the nose

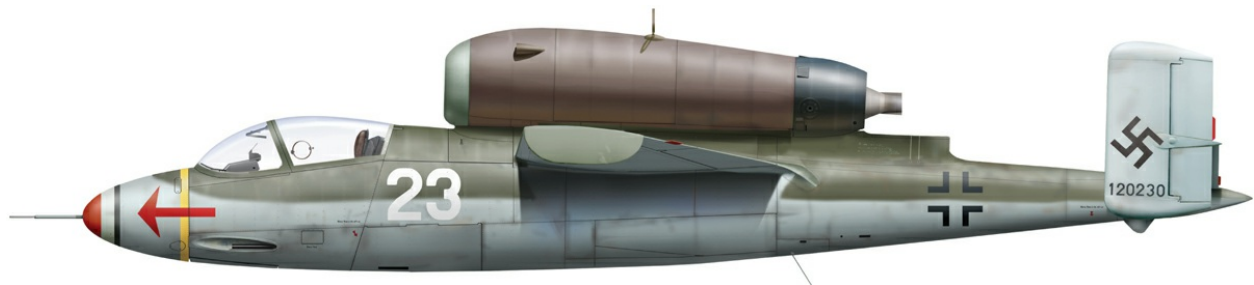
First Flight Date: 6 December 1944

Developed as the *Volksjäger* ('People's Fighter') by Heinkel in the final desperate months of Nazi Germany, the He 162 was designed, built and flown in the staggeringly short time of just ten weeks between October and December 1944. Of mixed construction (wooden wings, metal fuselage and metal/wood tailplane), the He 162 was powered by a BMW 003 turbojet perched atop the fuselage. Simple to construct, the fighter was slated for production by three factories, whose combined output potentially amounted to no fewer than 4,000 He 162s a month! Faced with a shortage of pilots to fly these jets, the Luftwaffe was told to crew the aircraft with hastily trained members of the Hitler Youth – fortunately for them, the war ended before this flawed plan could be put into place.

Ten prototypes were built by Heinkel prior to the definitive production standard being settled on in the form of the He 162A-1, which featured 30mm cannon, anhedral wingtips and an increased-span tailplane. The A-1 would have a short-lived production life, however, as it

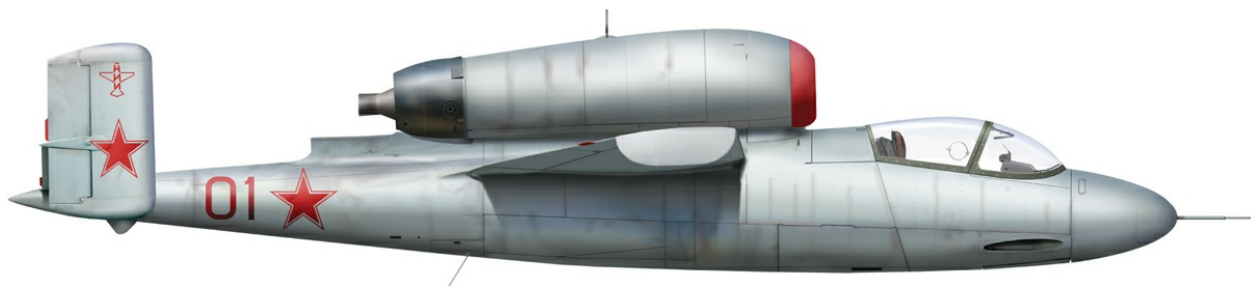
suffered badly from cannon vibration whenever the weapons were fired. It was swiftly replaced by the He 162A-2, which featured 20mm cannon instead. The A-2 officially entered service with I./JG 1 at Leck in January 1945, and although around 150 aircraft were delivered to the Luftwaffe (the majority to this *Gruppe*), Allied aircraft recorded few encounters with the fighter prior to VE Day.

FIGHTER DETAILS



He 162A-2 Wk-Nr. 120230 'White 23' of *Stab*/JG 1, Leck, Germany, May 1945

It is possible that this aircraft was assigned to the *Geschwaderkommodore* of JG 1, veteran ace Oberst Herbert Ihlefeld. The aircraft was among those found at Leck by the British on 6 May 1945 when I./JG 1 surrendered to a convoy of light armour and lorries carrying RAF personnel. All of the He 162s assigned to the *Gruppe* had the tips of their noses adorned in the national military colours of red, white and black, along with a single red arrow on either side.



He 162A-2 'Red 01' of the *Letno-Islyedovatel'skiy Institut Narodny Kommisariat Aviatsionoy Promishlinosti*, Moscow, spring 1946

The Russians are believed to have acquired seven He 162s in various conditions following the defeat of Germany, with this particular A-2 being assembled at Heinkel's EHAG Rostock factory under Russian supervision. These jets were painted in an overall silver-grey, with the exception of the engine intake ring, in red, and the rear of the engine unit in black. The Soviet star was applied to the fuselage and tail fins, and the emblem of the *Letno-Islyedovatel'skiy Institut Narodny Kommisariat Aviatsionoy Promishlinosti* (Flight Research Institute of the People's

Commissariat for the Aircraft Industry) was carried on the right side tail fin only.

IAR 80/81

SPECIFICATIONS (IAR 81C)

Crew: Pilot

Length: 29ft 5.15in (8.97m)

Wingspan: 34ft 6.15in (10.52m)

Height: 11ft 9.75in (3.60m)

Empty: 4,685lb (2,125kg)

Max T/O: 6,768lb (3,070kg)

Max Speed: 337mph (542km/h)

Range: 640 miles (1,030km) with external tanks

Powerplant: IAR-K 14-1000A

Output: 1,025hp (764kW)

Armament: Four 7.92mm machine guns and two 20mm cannon in wings

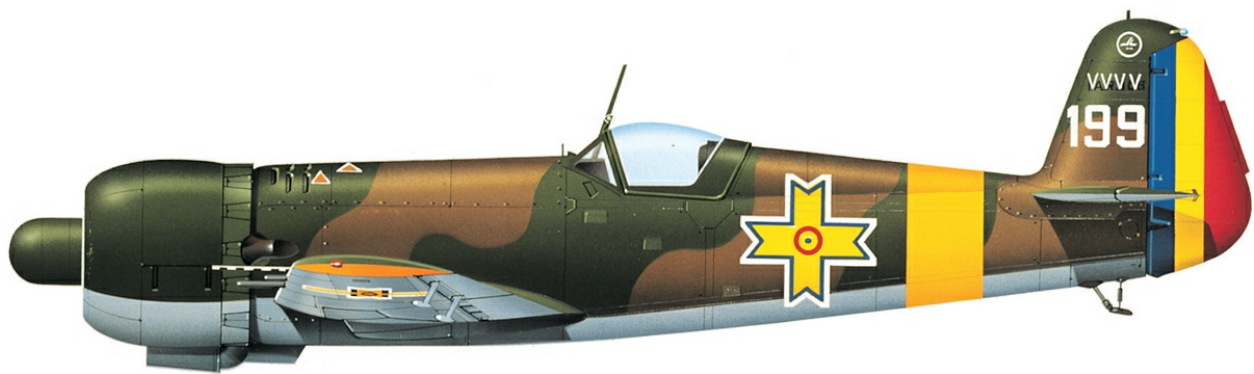
First Flight Date: April 1939 (I.A.R.80)

This indigenous fighter was developed in the late 1930s by Industria Aeronautica Romania (IAR) to replace the Polish PZL P.24E, which had been built under licence by the company. Numerous features of the Polish fighter were incorporated into the design of the IAR 80, including the fitting of a fixed tail skid rather than a tailwheel. The first production of 51 IAR 80s appeared in the spring of 1940, and these early aircraft featured an enclosed cockpit and a cantilever tailplane. Issued to Romanian Air Force units in January 1941, they were subsequently joined by 80 A-, 30 B- and 50 C-model IAR 80s, each of which featured the more powerful IAR-K 14-1000A radial engine and a variety of machine gun and cannon armament.

The follow-on IAR 81 family was closely modelled on the IAR 80 airframe, but with added structural strengthening to allow the aircraft to perform fighter-bomber and dive-bomber roles. The first IAR 81s entered service in October 1941, and A-,B- and C-model sub-variants again featured varying gun armament and bomb carriage capabilities.

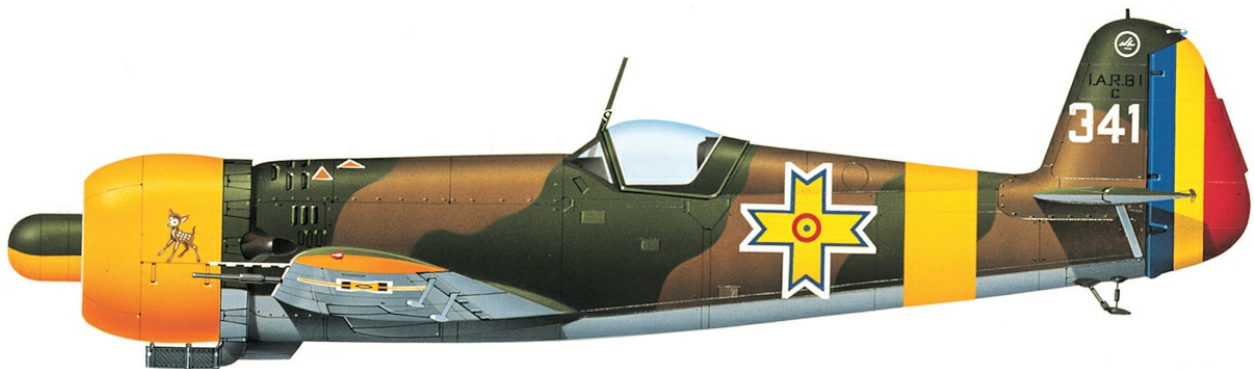
The 461st, and last, IAR 81 was produced in late 1943, after which the factory concentrated on local production of the superior Bf 109G-6. The IAR 80/81 made its combat debut on the Eastern Front in 1941/42, before returning to Romania to perform home defence missions over Bucharest and the Ploesti oilfields. Surviving examples were converted into two-seat IAR 80DC trainers post-war, and remained in service until 1952.

FIGHTER DETAILS



IAR 80B 'White 199' of Căpitan aviator Emil Frideric Droc, *Escadrila 60 vânătoare*, *Grupul 8 vânătoare*, Tuzov, Stalingrad area, Soviet Union, September 1942

A test pilot at the IAR works, Droc volunteered for frontline service in 1942 and was appointed CO of *Escadrila 60 vânătoare* near Stalingrad in September of that year. He flew 42 missions during his brief stint in the frontline, being credited with three confirmed aerial victories, one probable and one ground victory during that time. Note the four victory 'Vs' painted on the fin of 'White 199', which was destroyed at Tuzov airfield by a Soviet bomber on 19 September 1942.



IAR 81C 'White 341' of Sublocotenent aviator Dumitru 'Take' Baciu, *Grupul 6 vânătoare*, Popesti-Leordeni,

Romania, February 1944

Dumitru 'Take' Baciú was assigned this IAR 81C in early 1944, and during the summer of that year he shot down two USAAF aircraft to add to the three he claimed on the Eastern Front. During the Romanian Air Force's anti-Axis campaign, Baciú was also credited with destroying a German Bf 109G. He was one of only three IAR 80/81 pilots to achieve this rare feat. Note Baciú's personal emblem, Walt Disney's 'Bambi', painted in great detail on the engine cowling.

JUNKERS Ju 88C/G/R

SPECIFICATIONS (Ju 88G-7)

Crew: Three/four-man crew

Length: 54ft 1.5in (16.50m)

Wingspan: 65ft 10.5in (20.08m)

Height: 15ft 11in (4.85m)

Max T/O: 28,900lb (13,109kg)

Max T/O: 32,350lb (14,674kg)

Max Speed: 389mph (626km/h)

Range: 1,400 miles (2,253km)

Powerplants: two Junkers Jumo 213E engines

Output: 3,450hp (2,572kW)

Armament: Four 20mm cannon in ventral tray; one 13mm machine gun in rear cockpit and two upward-firing 20mm cannon in upper fuselage

First Flight Date: 21 December 1936 (Ju 88A)

Although designed first and foremost for the fast medium-bomber role, Junkers' highly versatile Ju 88 was easily modified into a *Zerstörer* heavy fighter, and the first such aircraft flew as early as 1939. The primary changes carried out to the basic A-model airframe by the manufacturer centred on the replacement of the former's glazed nose with a solid fairing (equipped with both cannon and machine guns) and the modification of the aircraft's bomb-bay to house a weapons gondola. The evolution of the C-model heavy fighter mirrored that of the Ju 88 bomber, with more powerful engines, greater span wings and strengthened fuselage being incorporated into the *Zerstörer* as it appeared on the A-model. A small number of Ju 88Cs made the type's combat debut over Poland in September 1939, and from then on heavy fighter variants were committed to the action on every front up to VE Day.

The ultimate Ju 88 fighter variant was the G-model of 1944, which was

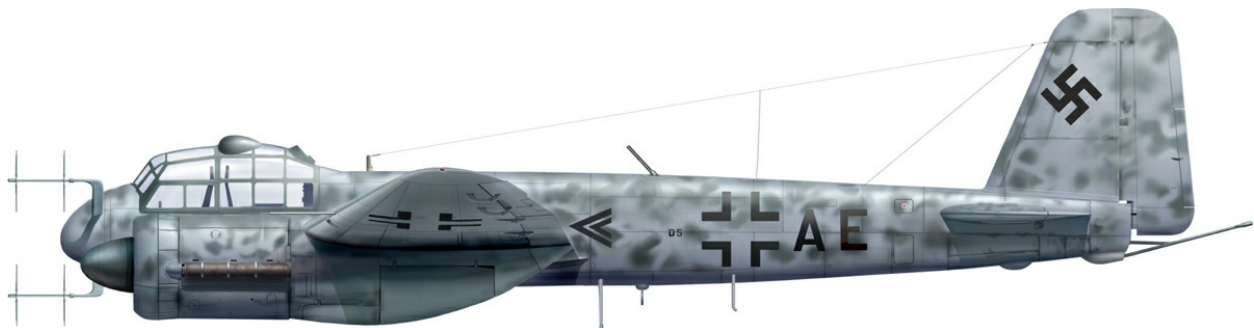
fitted with a FuG 220 or 227 radar, an astounding array of cannon and machine gun armament and advanced Junkers Jumo (methanol-water injected) or BMW engines. A dedicated nightfighter, the first Ju 88G-1s entered service with the *Nachtjagd* in the summer of 1944, replacing Ju 88C/Rs as well as some Bf 110Gs. Despite suffering heavy losses in the final months of the war, those *Nachtjagdgeschwader* equipped with Ju 88Gs inflicted serious casualties on Bomber Command through to war's end.

FIGHTER DETAILS



Ju 88C-6 Wk-Nr 3060381 F8+BX of 13./KG 40, Lorient, France, September 1943

Assigned to *Fliegerführer Atlantik*, V./KG 40 had as many as 35 Ju 88Cs on strength for much of 1943–44. These undertook sweeps in support of U-boat Command, attempting to repulse enemy anti-submarine aircraft as they provided cover for its vessels transiting in and out of the Bay of Biscay. Ju 88C crews would escort surface ships and blockade-runners or damaged U-boats, although there was no direct contact with the latter because of technical shortcomings with radio equipment.



Ju 88G-6b D5+AE of Major Berthold Ney, Kommandeur of IV./NJG 3, Jever or Nordholz, Germany, early 1945

Marked with the *Kommandeur's* chevron, this aircraft was fitted with FuG 220 *Lichtenstein* radar

in the nose and it also had a tail-warning aerial array. Twin MG 151 *Schräge Musik* cannon were installed in the upper fuselage. Berthold 'Petz' Ney had claimed eight victories by the time he was shot down on 3/4 March 1945 and badly injured when he bailed out of his shot-up Ju 88 at low altitude over Knesebeck, Germany.

KAWANISHI N1K1-J SHIDEN

SPECIFICATIONS (N1K1-J)

Crew: Pilot

Length: 29ft 2in (8.89m)

Wingspan: 39ft 4.5in (12.00m)

Height: 13ft 4in (4.06m)

Empty: 6,387lb (2,897kg)

Max T/O: 9,526lb (4,321kg)

Max Speed: 363mph (584km/h)

Range: 1,581 miles (2,544km) with external tanks

Powerplant: Nakajima NK9H Homare 21

Output: 1,990hp (1,484kW)

Armament: Two 7.7mm machine guns in nose; two 20mm cannon in wings; plus some aircraft fitted with additional 20mm cannon in underwing gondolas

First Flight Date: 6 December 1942

Privately developed by Kawanishi from its limited-production N1K1 Kyofu floatplane fighter of 1942, the Shiden (Violet Lightning) retained the former's basic airframe, in combination with a retractable wheeled undercarriage. The other main changes made centred on a switch of powerplants from a Mitsubishi to a Nakajima radial and the shifting of the wing to a mid-fuselage position. The adoption of the mid-mounted wing would later cause many problems with the aircraft's long (and weak) undercarriage legs and complex retraction system. Initial flight trials of the Shiden revealed not only the undercarriage problems, but also that the fighter was some 45mph slower than anticipated due to the Homare engine failing to deliver its promised levels of power. Pilots also complained of restricted visibility due to the positioning of the wing mid-fuselage.

Despite these failings, the N1K1-J was still a vast improvement on the Imperial Japanese Navy Air Force's (IJNAF) venerable A6M5 Zero-sen

and temperamental J2M Raiden, and when the first Shidens went into action over the Philippines in October 1944, Allied pilots soon learned to respect their fighting abilities. Aside from the N1K1-J/Ja fighter variants, the fighter-bomber optimized N1K1-Jb/Jc also saw limited service in the ill-fated home defence campaign of 1945. By the time production switched to the definitive N1K2-J in late 1944, 1,007 Shidens had been completed.

FIGHTER DETAILS



N1K1-J Shiden '341S-12' of the 341st *Kokutai*, Marcott, Luzon, late October 1944

The 341st *Kokutai* was the first frontline unit in the IJNAF to be issued with the Shiden, this particular aircraft being assigned to Sento 401st Hikotai. Rushed into action in October in defence of the Philippines, the 341st (which also flew Zero-sens) operated primarily from Marcott – part of the Clark Field complex – on Luzon. Although the *kokutai* claimed a number of victories over the Philippines, the 341st had been wiped out by early January 1945.



N1K1-J Shiden '6' of CPO Tomeshiro Hiro, *Tsukuba Kokutai*, Tsukuba, Japan, February 1945

Assigned to the *Tsukuba Kokutai* as a training aircraft for would-be Shiden pilots, this aircraft saw combat with CPO Tomeshiro Hiro at the controls on 16 February 1945 when US Navy carrier aircraft attacked the Kanto Plain for the first time. Hiro, who was later killed flying with the 343rd *Kokutai*, was credited with damaging an F6F when the mixed *Tsukuba Kokutai* formations of Zero-sens and Shidens clashed with the US Navy fighters.

KAWANISHI N1K2-J SHIDEN-KAI

SPECIFICATIONS (N1K2-J)

Crew: Pilot

Length: 30ft 8in (9.35m)

Wingspan: 39ft 4.5in (12.00m)

Height: 13ft 0in (3.96m)

Empty: 5,858lb (2,657kg)

Max T/O: 10,714lb (4,860kg)

Max Speed: 369mph (594km/h)

Range: 1,488 miles (2,395km) with external tanks

Powerplant: Nakajima NK9H Homare 21

Output: 1,990hp (1484kW)

Armament: Four 20mm cannon in wings; four 551lb (250kg) bombs under wings

First Flight Date: 31 December 1943

Acknowledging the faults of the N1K1-J even before the latter had entered series production, Kawanishi commenced work on the improved N1K2-J in mid-1943. To eradicate the undercarriage issues that had plagued the Shiden, the wing on the Shiden-Kai was lowered to a similar position to that employed by the Kyofu floatplane. Other improvements saw the engine moved forward and the fuselage slightly lengthened to cure a centre of gravity problem, redesigned tail surfaces and a revised cowling shape. The construction of the fighter was also simplified, allowing building man hours to be reduced and the overall weight of the aircraft to be reduced by 500lb.

Deliveries of aircraft (given the Allied reporting name 'George 21') to the frontline commenced in July 1944, and eight factories were tooled up for mass-production of the N1K1-2. However, B-29 raids severely hampered overall output to the extent that just 428 had been built by VJ Day – one factory even failed to produce a single completed fighter. The Shiden-Kai was easily the best IJNAF fighter of the war, and the aircraft

could more than hold its own against any Allied foe, including the much-feared F4U-4 Corsair. The sole unit to be equipped with the N1K2-J was the 343rd *Kokutai*, and it was committed to escorting kamikaze missions to Okinawa and home defence operations over southwestern Japan.

FIGHTER DETAILS



N1K2-J Shiden-Kai 21 '343-A-15' of Lt Naoshi Kanno, 343rd *Kokutai*, Matsuyama, Japan, early April 1945

Choosing this aircraft as his personal mount, 25-victory ace, Lt Naoshi Kanno ordered his crew chief to paint two diagonal bands on its fuselage in the hope that they would attract enemy fighters to him so that he could in turn shoot them down. The large white numbers, hand-applied using water-soluble paint, seen within the *Hinomaru*, were added to aircraft for training purposes, providing a visual aid for new pilots working towards full operational status.



N1K2-J Shiden-Kai 21 '343-C-45' of Lt Takashi Oshibuchi, 343rd *Kokutai*, Omura, May 1945

Ace Lt Takashi Oshibuchi was CO of *Sento 701st Hikotai* and overall commander of the 343rd *Kokutai* when on operations. His aircraft was marked with squadron leader's stripes, and it is also depicted here armed with 60kg No 27 aerial burst rockets. Oshibuchi used this weapon for the first time – with little success – when attacking B-29s over Kyushu on 5 May 1945.

KAWASAKI Ki-45 TORYU

SPECIFICATIONS (Ki-45-Kai-Hei)

Crew: Pilot and observer/gunner

Length: 36ft 1in (11.00m)

Wingspan: 49ft 3.25in (15.00m)

Height: 12ft 1.75in (3.70m)

Empty: 8,146lb (3,695kg)

Max T/O: 11,631lb (5,276kg)

Max Speed: 340mph (547km/h)

Range: 1,243 miles (2,000km)

Powerplants: two Mitsubishi Ha-102 engines

Output: 2,160hp (1,610kW)

Armament: One 37mm cannon in ventral tunnel; two upward-firing 20mm cannon behind forward cockpit, and one 7.92mm machine gun in rear cockpit

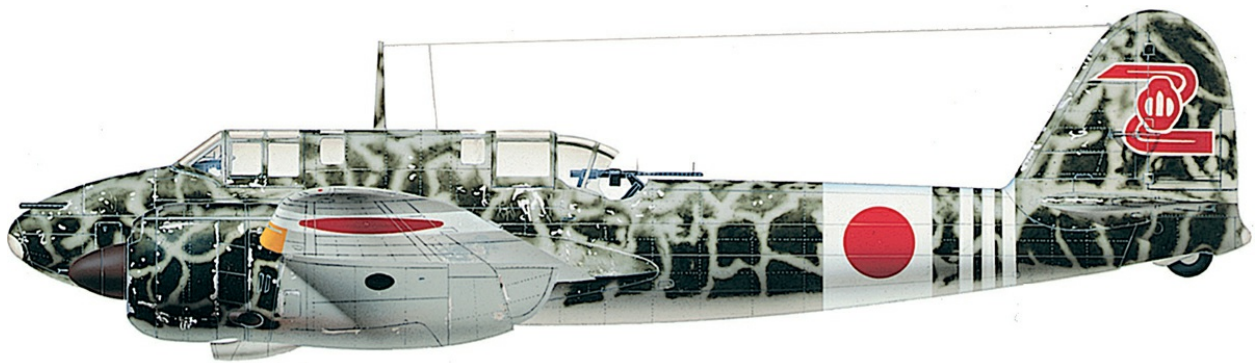
First Flight Date: May 1941

The first twin-engined fighter to serve with the IJAAF, the Ki-45 Toryu (Dragonslayer) proved to be a successful platform for both the ground-attack and nightfighting missions come World War II. The IJAAF had ordered development of a twin-engined, two-seat fighter in 1937, assigning the job to Kawasaki Shipbuilding. The company's prototype aircraft was initially powered by licence-built Bristol Mercury engines, but these provided such a disappointing performance that they were replaced by Nakajima Ha-25 radials. Kawasaki also thoroughly overhauled the design at around the same time, the revised fighter, designated Ki-45-Kai (for kaizo – modified), emerging with a remodelled fuselage, revised wings and tail, heavier armament and increased fuel capacity.

By October/November 1942 the first production-standard Ki-45-Kai had made their combat debut over Burma and China, respectively. Used as a ground-attack platform and armed with a variety of weapons, the Ki-

45 also eventually became a makeshift, 'radarless', nightfighter following the switching of B-24 Liberator heavy bomber raids by the USAAF's Fifth Air Force to the hours of darkness. Further specialist cannon and machine gun fits were trialled and approved by the nightfighting Ki-45 sentais, which were in turn adopted by Kawasaki. New engines were also fitted to the Ki-45 in late 1943, resulting in the production of the near-definitive Toryu in the form of the Ki-45-Kai-Hei (or Kai-c). This aircraft was a formidable opponent for the B-29 Superfortress when it appeared over the Japanese home islands in 1945, for it was able to perform interceptions both during the day and at night, at any altitude. Kawasaki delivered 1,701 Ki-45s to the IJAAF between 1941 and 1945.

FIGHTER DETAILS



Ki-45-Kai-Ko of Lt Isamu Kashiide, 2nd *Chutai*, 4th *Sentai*, Kozuki, Japan, 1944–45

Lt Kashiide used this aircraft to perfect his lethal method of head-on attacks against B-29s over Japan in 1944–45. He enjoyed considerable success with this technique, claiming to have downed no fewer than 26(!) Superfortresses. Kashiide's 'Nick' boasted 37mm cannon as its primary weapon, his observer's hand-held 7.92mm machine gun proving next to useless in fending off the B-29s' P-51D and P-47N escort fighters.



Ki-45-Kai-Ko of Sgt Nobuji Negishi, 3rd *Chutai*, 53rd *Sentai*, Matsudo, Japan, spring 1945

The 53rd *Sentai* marked all of its 'Nicks' with a stylized '53' on the fighter's large vertical surface. Fitted with a 20mm cannon, the aircraft was flown by leading *Sentai* ace Sgt Nobuji Negishi. He claimed six B-29s destroyed and seven damaged in the Ki-45-Kai-Ko.

KAWASAKI Ki-61 HEIN

SPECIFICATIONS (Ki-61-I)

Crew: Pilot

Length: 28ft 8.5in (8.75m)

Wingspan: 39ft 4.5in (12.00m)

Height: 12ft 2in (3.71m)

Empty: 4,872lb (2,210kg)

Max T/O: 7,165lb (3,250kg)

Max Speed: 368mph (592km/h)

Range: 684 miles (1,100 km)

Powerplant: Kawasaki Ha-40

Output: 1,175hp (876kW)

Armament: Two 12.7mm machine guns in nose and two in wings (Ki-61-I only)

First Flight Date: December 1941

One of the few examples of Axis material cooperation bearing fruition in World War II, the Kawasaki Ha-40 inline engine was a lightened development of the excellent Daimler-Benz DB 601A inverted V12 inline motor. The fighter designed specifically to utilize this powerplant was the sleek Ki-61 Hein (Flying Swallow), which, aside from having an inline rather than a more traditional radial engine, also had a high wing loading, armour protection for the pilot and self-sealing tanks – all things rarely associated with Japanese combat aircraft of the period. While the fighter could not hope to emulate the agility of previous IJAAF fighters, tending to stall and spin out to port with any overly violent use of the ailerons and rudder, the Ki-61 still retained a measure of traditional manoeuvrability. It responded quickly and positively to smooth use of the controls, and could hold its own in a dive against its heavier US opponents.

The Hien made its combat debut over the jungles of New Guinea in April 1943, and it quickly proved itself to be more than a match for Allied

P-38s, P-39s and P-40s. The Ki-61 (given the Allied reporting name 'Tony') was soon plagued by engine problems, which seriously impeded the Ki-61's impact on the campaign despite the valiant efforts of its pilots. Used operationally on other fronts, but only in modest numbers, the aircraft never achieved its expected potential. During the air defence of Japan, however, it became the equipment of choice for several elite fighter units.

In production until war's end, the K-61 was the subject of many improvements, both in respect to its armament (which was increased through the fitment of cannon and bomb racks) and the power output of its Kawasaki engine. The resulting K-61-II-Kai had a performance to rival any of its piston-engined contemporaries, especially at altitude. Production of the Ki-61-II-Kai commenced in September 1944, but the combination of chronic powerplant problems and a devastating B-29 raid on the Kawasaki engine works meant that only 99 of the 374 airframes completed received the definitive Ha-140 V12.

FIGHTER DETAILS



Ki-61-I Ko '56' of Sgt Iwao Tabata, 3rd *Chutai*, 68th *Sentai*, Wewak, New Guinea, December 1943

Sgt Iwao Tabata flew this crudely camouflaged aircraft while serving as the second 'rotte' (pair) leader in 3rd *Chutai* leader Lt Akenori Motoyama's *Shotai*. He was shot down in it near Wewak on 22 December 1943 but survived the experience following a four-day trek through the jungle.

Tabata later flew as an instructor with the 39th *Kyoiku Hikotai* in the air defence of Japan, claiming two fighter kills and two B-29s damaged.



Ki-61-I Tei serial number 5262 '62' of Capt Teruhiko Kobayashi, 244th *Sentai Hombu*, Chofu, Japan, April 1945

This olive brown camouflaged Hien (serial number 5262) was flown by 2Lt Yujiro Itakura while escorting the 19th *Shimbu-tai* (kamikaze attack) on 19 March 1945. It was re-painted in preparation for assignment to high-scoring ace Capt Teruhiko Kobayashi (hence the kill silhouettes) after he was wounded on 12 April 1945. When he returned to duty, Kobayashi switched to the Ki-100, so it is unlikely he ever flew 5262 in combat. The aircraft was manufactured in November 1944 after the introduction of factory painting.

KAWASAKI Ki-100

SPECIFICATIONS (Ki-100 Otsu)

Crew: Pilot

Length: 28ft 11.25in (8.82m)

Wingspan: 39ft 4.5in (12.00m)

Height: 12ft 3.5in (3.75m)

Empty: 5,567lb (2,525kg)

Max T/O: 7,705lb (3,495kg)

Max Speed: 360mph (579km/h)

Range: 1,367 miles (2,200km) with external tanks

Powerplant: Mitsubishi Ha-112-II

Output: 1,500hp (1,118kW)

Armament: Two 20mm cannon in nose and two 12.7mm machine guns in wings; provision for two 551lb (250kg) bombs under wings

First Flight Date: 1 February 1945

Considered by many to be the IJAAF's best fighter of the war, the Ki-100 was born out of an urgent need for an aircraft that could intercept USAAF B-29s raiding the home islands at altitudes of around 30,000ft. Originally, the Ki-61-II-Kai had been slated to fill this requirement, but chronic problems with its inline Ha-140 powerplant resulted in more than 200 airframes sat idle, devoid of an engine. In November 1944 Kawasaki was ordered by the Japanese Ministry of Munitions to instal a replacement engine, and after some searching, the Mitsubishi Ha-112 radial was chosen. Engineers studied the engine mountings of an imported Fw 190A to see how their German counterparts had mated a 'fat' radial to a slim fuselage. Armed with this knowledge, work proceeded swiftly on the Ki-100-I, and 271 airframes were fitted with the Mitsubishi engine between March and June 1945.

The new fighter came as an unpleasant surprise to the Americans, with the Ki-100 immediately enjoying success not only against the feared B-

29s, but also Hellcats, Mustangs and Corsairs. Aside from being a joy to fly, the Ki-100 also proved immensely popular with long-suffering IJAAF groundcrew – many of whom had been struggling with the Ha-40/140 for longer than they cared to remember. Finally, an all-new version of the Ki-100 entered production in May 1945, the -1b featuring cut-down rear fuselage decking and an all-round vision canopy.

FIGHTER DETAILS



Ki-100 Otsu of Maj Yohei Hinoki, 2nd *Daitai*, Akeno Kyodo Hikoshidan and 111th *Sentai*, Akeno, Japan, July 1945

The uppersurface of the wings of this aircraft had diagonal cobalt blue bands outlined in white to commemorate Hinoki's former commander in the 64th *Sentai*, Maj Tateo Kato. The tail tip is the marking of the 111th *Sentai*, and it was supposed to be in the *Chutai* colour. As ace Maj Hinoki commanded the 2nd *Daitai* (4th and 5th *Chutai*), it seems unlikely that it was white (for the 1st *Chutai*).



Ki-100 Ko of Maj Toyoki Eto, 1st *Daitai*, Akeno Kyodo Hikoshidan and 111th *Sentai*, Akeno, Japan, July 1945

Maj Toyoki Eto commanded the 1st *Daitai* of the 111th *Sentai* (1st, 2nd and 3rd *Chutais*). The three bands to the rear of the *Hinomaru* denoted that the fighter was flown by the unit

commander. The colour of this aircraft was referred to as 'charcoal', but the Japanese term describing the colour – *kuro kasshoku* – means 'blackish brown', and probably refers to a particularly dark olive drab found on some batches of Ki-100 Ko.

LAVOCHKIN-GORBUNOV-GUDKOV

LaGG-3

SPECIFICATIONS (LaGG-3)

Crew: Pilot

Length: 29ft 2.5in (8.90m)

Wingspan: 32ft 2in (9.80m)

Height: 8ft 10in (2.69m)

Empty: 5,776lb (2,620kg)

Max T/O: 7,231lb (3,280kg)

Max Speed: 348mph (560km/h)

Range: 497 miles (800km)

Powerplant: Klimov M-105PF

Output: 1,240hp (925kW)

Armament: One 20mm or 23mm cannon in propeller hub and two 7.62mm or 12.7mm machine guns in upper cowlings; provision for 441lb (200kg) bomb load or six 82mm rockets under wings

First Flight Date: 30 March 1940

Built primarily of wood, the LaGG-3 can trace its origins to the I-22 fighter of 1938–39, which was subsequently designated the LaGG-1 in honour of the principal design bureau involved – Lavochkin, Gorbunov and Gudkov. Early flight trials revealed serious performance and handling deficiencies, so fixed (later automatic) wing slats, new outer wing panels, aerodynamic revisions and additional fuel tanks were added. The overall structure of the fighter – redesignated I-301 – was lightened and its armament also increased. After further flight tests, the LaGG-1 was ordered into production in late 1940, and with the fitment of the more powerful M-105PF engine, the fighter entered service as the LaGG-3 in early 1941. No further airframe or engine changes were subsequently made to the LaGG-3 for the remainder of its brief production life, but variations in armament were common. The aircraft

proved easy to build, and by the time the last LaGG-3 left the factory in June 1942, 6,527 had been built in less than two years.

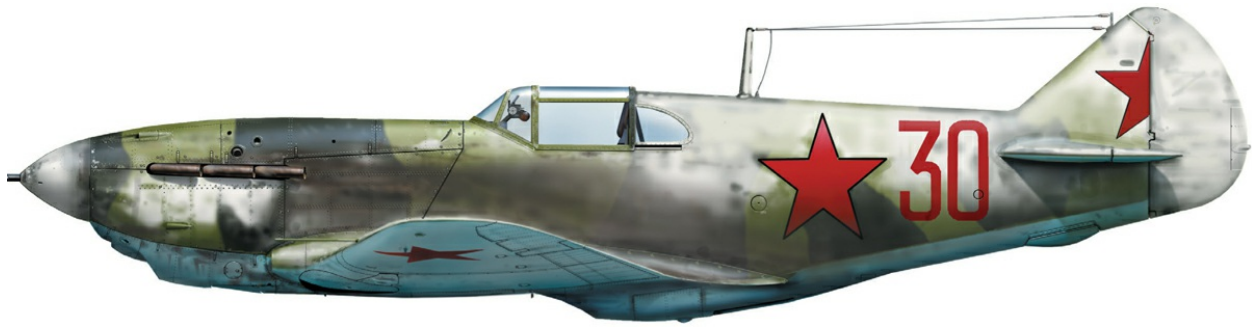
One of the few modern fighter types in the Soviet arsenal at the time of the German invasion in June 1941, the LaGG-3 earned a reputation for rugged reliability, although it was not a match for the Luftwaffe fighters of the day. Being underpowered and less manoeuvrable than either the Bf 109F/G or the Fw 190A, the LaGG-3 suffered heavy losses to both types in the first 18 months of the war in the East despite the strength of its airframe and the fire resistance of its wooden structure. The fighter's laminated wooden panels were prone to shattering, however, when hit by high-explosive cannon rounds.

FIGHTER DETAILS



LaGG-3 Series 1 'White 76' of Capt Leonid Gal'chenko, 145th IAP, Karelian Front, Soviet Union, late autumn 1941

Early LaGG-3 came off the production line in traditional Red Air Force colours of dark green uppersurfaces and light blue undersurfaces. With the war going so badly, and fighters desperately needed at the front, there was not time to add the camouflage ordered in June 1941. It was eventually applied to most frontline aircraft by late 1941, groundcrew painting fields of black onto the standard dark green. Gal'chenko's 'White 76' is also marked with his cat insignia, which he adopted in September 1941.



LaGG-3 Series 29 'Red 30' of Capt Semyon L'vov, 3rd GIAP-KBF, Leningrad Front, Soviet Union, winter 1943

Capt L'vov's aircraft shows the effects of heavy weathering and excessive flying, its temporary white winter finish being badly stained by exhaust deposits and oil leaks. Note that the original rudder has been replaced with one from a different machine, and that it not only lacks the red star, but is also considerably cleaner than the rest of the LaGG-3.

LAVOCHKIN La-5/7

SPECIFICATIONS (La-7)

Crew: Pilot

Length: 29ft 2.5in (8.90m)

Wingspan: 32ft 1.75in (9.80m)

Height: 8ft 6.25in (2.60m)

Empty: 5,842lb (2,620kg)

Max T/O: 7,496lb (3,400kg)

Max Speed: 423mph (680km/h)

Range: 615 miles (990km)

Powerplant: Shvetsov M-82FN

Output: 1,850hp (1,380kW)

Armament: Two or three 20mm cannon in upper cowlings; provision bombs or rockets under wings

First Flight Date: March 1942 (La-5)

The LaGG-3 was the last of the new generation piston-engined fighters to enter service with the Red Air Force in early 1941, and from the start it earned an evil reputation from which it never recovered. Dubbed the 'guaranteed varnished coffin' by those that flew it due to the aircraft's unique plastic-impregnated wooden construction and the ease with which it was shot down, the fighter's limited successes were gained at a high cost by stubborn and heroic pilots. Reports of the LaGG-3's inadequacies in combat against Luftwaffe (and Finnish) fighters resulted in the aircraft's inline M-105PF engine being replaced by the far more powerful Shvetsov M-82 radial in early 1942. Testing soon proved that the modified fighter was not only faster than its predecessor, but also more capable at medium to high altitudes.

Designated the Lavochkin La-5, the first examples to reach the frontline (during the battle for Stalingrad in late 1942) were actually re-engined LaGG-3s. Aside from the change of powerplant, the aircraft had also had its machine gun armament replaced by two 20mm cannon. By

late March 1943 production of the definitive La-5N had commenced, this variant featuring a fuel-injected M-82FN for better performance at higher altitudes and cut down rear fuselage decking and a new canopy for improved all-round vision. The last single-seat fighter of wooden construction to see large-scale production and service, the La-5FN was more than a match for the Bf 109G and could hold its own with the Fw 190.

In November 1943 the further improved La-7 started flight trials, this model having even greater performance thanks to the lightening of its overall structure and adoption of the metal wing spars featured in late-build La-5FNs. Attention was also paid to reducing the fighter's drag coefficient, which resulted in the adoption of a revised cowling and inboard wing leading edge surfaces. The La-7 entered service in the spring of 1944, and soon became the favoured mount of Soviet aces. Further developments by Lavochkin resulted in the superlative La-9 and La-11, but these went into production too late to see service in World War II.

FIGHTER DETAILS



La-5 'White 84' of Capt Vicente Beltrán Rodrigo, 960th IAP, Bryansk Front, Soviet Union, May 1943

This La-5 bears a patriotic slogan rather than a presentation inscription, the wording '*Viva la revolution socialista en SSSR*', clearly identifying its pilot as being a Spaniard. Rodrigo had scored nine victories flying Polikarpov fighters during the Spanish Civil War, and he was exiled to the Soviet Union after the Republicans had been defeated. He returned to Spain in 1958.



La-7 'White 93' of Lt Col Sergei Dolgushin, 156th IAP, Germany, April 1945

HSU recipient Lt Col Sergei Dolgushin claimed eight of his 17 individual victories with the La-7 in the final months of the war. The red nose of his fighter was a formation marking for the 8th IAK, and the red and white tail stripes almost certainly signified an aircraft assigned to the 215th IAD – the 156th IAP was controlled by these units. On the fighter's nose is the HSU star.

LOCKHEED P-38 LIGHTNING

SPECIFICATIONS (P-38J)

Crew: Pilot

Length: 37ft 10in (11.53m)

Wingspan: 52ft 0in (15.85m)

Height: 9ft 10in (3.00m)

Empty: 12,780lb (5,797kg)

Max T/O: 21,600 lb (9,798kg)

Max Speed: 414mph (666km/h)

Range: 2,260 miles (3,637km) with external tanks

Powerplants: two Allison V-1710-89/-91 engines

Output: 2,850hp (2,126kW)

Armament: One 20mm cannon and four 0.50in machine guns in nose; maximum bomb load 4,000lb (1,814kg) under wings

First Flight Date: 27 January 1939

The P-38 Lightning was Lockheed's first venture into the world of high-performance military aircraft. Keen to break into this lucrative marketplace, the company had eagerly responded to the US Army Air Corps' (USAAC) 1937 Request for Proposals pertaining to the acquisition of a long-range interceptor. The new machine had to have a top speed in excess of 360mph at 20,000ft, the ability to take-off and land over a 50ft obstacle within 2,200ft, the reliability to fly at full throttle for more than an hour non-stop, and have armament double that of the P-36A Hawk – the USAAC's frontline fighter of the period.

No aircraft then in service, or under development, with any air arm across the globe could match these performance figures, and Lockheed's design team, led by H L Hibbard and Clarence 'Kelly' Johnson, soon realized that any new type proposed by them would have to be twin-engined in order to allow the fighter to attain the top speed or rate of climb stipulated by the specification. The powerplant chosen for the

fighter was the 960hp Allison V-1710, as used by its P-40 contemporary. Aside from the aircraft's novel twin-boom and central nacelle layout, the prototype XP-38 utilized butt-joined and flush-riveted all-metal skins and flying surfaces – a first for a US fighter. The XP-38's test programme progressed well, and aside from some minor adjustments to the flying surfaces and introduction of progressively more powerful Allison engines, frontline P-38s (of which 10,036 were built up to August 1945) differed little from the prototype throughout the aircraft's six-year production run.

The appellation 'Lightning' was bestowed upon the P-38 by the RAF and adopted by the Americans with the advent of the E-model in mid-1941. The definitive P-38 models – namely the E, F, H, J and L – fitted with supercharged Allison engines, improved Fowler flaps and extra fuel, proved more than a match for Axis fighters across the globe. Indeed, the Lightning was credited with more victories in the Pacific theatre than any other USAAF type, and the two top-scoring American pilots of World War II claimed all their victories with P-38s.

FIGHTER DETAILS



P-38H-1 42-66532 of 1Lt Richard E Smith, 39th FS/35th FG, Port Moresby, New Guinea, September 1943

1Lt Smith began flying with the 39th FS while the unit was being re-equipped with P-38s in late 1942. He achieved one of the squadron's first victories with the Lightning on 6 January 1943 when he claimed an 'Oscar' over Lae. He was also credited with some of the first successes over the Ki-61 'Tony' on 21 July 1943. Smith's sole kill in this aircraft was achieved over the Lae area on 22 September 1943 when he downed a 'Zeke' for his seventh, and last, victory.



P-38J-15 42-104044 of 1Lt Kenneth R Frost Jr, 96th FS/82nd FG, Vicenza, Italy, November 1944

Flt Off Ken Frost joined the 96th FS on 27 June 1944 and flew his first combat mission the following day. On 7 July, after his sixth sortie, he was assigned this aircraft. Frost painted a caricature of his girlfriend, Betty, on its nose and named it *BATTLIN BET* (BB!) in her honour. By the time Frost flew his 50th, and last, mission on 17 November he had strafed an He 111 and destroyed four locomotives. Four days later, 42-104044 was destroyed in a crash-landing.

MACCHI C.200 SAETTA

SPECIFICATIONS (C.200)

Crew: Pilot

Length: 26ft 10.5in (8.19m)

Wingspan: 34ft 8.5in (10.58m)

Height: 11ft 6in (3.50m)

Empty: 4,451lb (2,019kg)

Max T/O: 5,710lb (2,590kg)

Max Speed: 312mph (502km/h)

Range: 540 miles (870 km)

Powerplant: Fiat A.74 RC38

Output: 870hp (649kW)

Armament: Two 12.7mm machine guns in nose; later aircraft additional two 7.7mm machine guns in wings; C.200CB could also carry 705lb (320kg) bomb load under wings

First Flight Date: 24 December 1937

Like the majority of Italian fighter aircraft of World War II, the C.200 was a joy for its pilots to fly, possessing excellent manoeuvrability and positive handling qualities. However, like its contemporaries, the Macchi was woefully under-armed by the standards of the day, being fitted with just two 12.7mm machine guns. The Saetta entered service with the *Regia Aeronautica* in October 1939, and by the time Italy entered the war in June of the following year, 156 had been delivered. The first 240 C.200s (of a production run totalling 1,153) were delivered with fully enclosed canopies, although this feature was quickly deleted when pilots complained of poor ventilation and restricted vision. Aside from this modification, the Saetta remained essentially unchanged throughout its production life, with the adoption of additional wing guns – under development for the follow-on C.202 Folgore – for late-build aircraft being the only other change incorporated by Macchi. In the field, numerous C.200s were adapted to carry underwing bombs or fuel tanks,

and these fighters were redesignated C.200CBs.

The Saetta made its combat debut over Malta in the summer of 1940, and the C.200 subsequently fought over the Eastern Front, North Africa, the Western Desert, Greece, Sicily and Yugoslavia. Like most surviving Italian combat aircraft, the C.200 also served with both the pro-Allied Co-Belligerent Air Force and the pro-German *Aeronautica Nazionale Repubblicana* following Italy's surrender in September 1943. Indeed, it remained in limited production until 1944.

FIGHTER DETAILS



C.200 386-10 of Sottotenente Luigi 'Gino' Del Bufalo, 386^a Squadriglia, 157° Gruppo, 53° Stormo, Turin-Caselle, Italy, November 1940

In early September 1940, 157° Gruppo commenced operations from Caselle airfield in Piedmont, where, on the 11th, it joined 53° Stormo. On 22 October the *gruppo* was re-equipped with the new Macchi C.200. The *gruppo* motto '*Sotto a chi tocca!*' ('Forward the next!') was devised by the pilot of this aircraft, 'Gino' Del Bufalo. The badge, which features a black armour-clad arm swinging a red spiked mace, was adopted in the autumn of 1940 on the initiative of the *gruppo* CO, Maggiore Guido Nobili.



C.200 363-2 of 363^a Squadriglia, 150° Gruppo Autonomo, Martuba, Libya, April 1942

This fighter displays the famous *Gigi Tre Osei* unit badge adopted by 150° Gruppo during the North African campaign. Sottotenente Maurizio Nicolis di Robilant had it applied to his own aircraft to honour his comrade Sottotenente Luigi 'Gigi' Caneppele. Caneppele, a pre-war Olympic glider pilot, had been killed in a flying accident. Di Robilant was himself killed on 14 February 1942, his Macchi being one of several C.200s downed near Acroma by anti-aircraft fire and Kittyhawks of Nos 112 and 3 Sqns.

MACCHI C.202 FOLGORE

SPECIFICATIONS (C.202)

Crew: Pilot

Length: 29ft 0.5in (8.85m)

Wingspan: 34ft 8.5in (10.58m)

Height: 9ft 11.5in (3.03m)

Empty: 5,545lb (2,515kg)

Max T/O: 6,766lb (3,069kg)

Max Speed: 372mph (598km/h)

Range: 475 miles (764km)

Powerplant: Alfa Romeo RA.1000 RC41-1 Monsone (Daimler-Benz DB 601A)

Output: 1,175hp (876kW)

Armament: Two 12.7mm machine guns in nose; later aircraft additional two 7.7mm machine guns in wings, some with two 20mm cannon under wings; C.202CB, guns and 705lb (320kg) bomb load under wings

First Flight Date: 10 August 1940

One of Italy's best fighters in World War II, the C.202 was developed from the popular C.200 Saetta of the late 1930s. While the Saetta had been a solid, reliable fighter, it had always suffered from a lack of straightline speed. To solve this problem, Macchi turned its back on homegrown radial engines for the C.200's replacement, instead choosing to use Daimler-Benz's excellent DB 601A inline engine as proven in the Bf 109E. The resulting fighter was 60mph faster than the C.200, possessed a superior rate of climb and could cruise at altitudes in excess of 37,500ft. There was little degradation of the Saetta's excellent handling qualities either. Designated the C.202 Folgore (Thunderbolt), initial production aircraft reached the frontline in July 1941 fitted with imported German engines, but the remaining 800+ were equipped with the licence-built Alfa Romeo RA.1000 RC41-1 Monsone version.

Unfortunately for pilots, Macchi, as with the Saetta, once again restricted the C.202's armament to just a pair of 12.7mm machine guns,

although late-build examples were also fitted with two additional guns in the wings and, in one batch, 20mm cannon in gondolas under them. A fighter-bomber variant in the form of the C.202CB was also produced, while those tropicalized (through the fitment of a sand filter) were known as C.202ASs.

The Folgore quickly proved superior to both the Hurricane II and P-40 Tomahawk/Kittyhawk during its first North African engagements in the autumn of 1941, and examples flown by as many as 19 *gruppi* took the fight to the Allies over in the Balkans, the Western Desert, Sicily, the Eastern Front and Malta. Most of Italy's ranking aces scored the bulk of their victories in the C.202. However, the combination of combat losses, relatively low production rates (approximately 1,200 were built in three years) and poor serviceability meant that the number of C.202s available to frontline units was far fewer than required. Like the C.200, the Folgore also served in modest numbers on both sides after the Italian surrender, and production of the fighter continued until 1944.

FIGHTER DETAILS



C.202 CLIII of Maggiore Andrea Favini, 153° Gruppo CO, 53° Stormo, Sicily, late 1942

On 11 September 1942, 153° Gruppo was redeployed to Sicily to take part in the third and final Axis air offensive against Malta, which ended in late October. Favini's Macchi displays a blue-bordered 'Ace of Clubs' Gruppo badge and a blue, white-outlined Roman numeral to indicate that this is the *gruppo* CO's mount. Both markings have been applied ahead of and behind the white fuselage band, which has been bisected by a long vertical blue strip.



C.202 363-2 of 363^a Squadriglia, 150^o Gruppo Autonomo, Benghazi, Libya, summer 1942

This *Gigi Tre Osei* C.202 was based at Benghazi's K 3 airfield for escort missions and to defend the harbour. In July 1942 Folgores of 150^o Gruppo carried out several interceptions of USAAF B-24D and RAF Liberator II bombers that were raiding the port. Three bombers were claimed shot down and two probably destroyed. 363-2 displays a two-tone colonial camouflage scheme with sparse dappling in dark olive green over light hazelnut brown. The undersides have been painted light blue-grey.

MACCHI C.205V VELTRO

SPECIFICATIONS (C.205V)

Crew: Pilot

Length: 29ft 0.5in (8.85m)

Wingspan: 34ft 8.5in (10.58m)

Height: 9ft 10.5in (3.00m)

Empty: 5,690lb (2,581kg)

Max T/O: 7,513lb (3,408kg)

Max Speed: 399mph (642km/h)

Range: 590 miles (950km)

Powerplant: Fiat RA.1050 RC58 Tifone (Daimler-Benz DB 605A-1)

Output: 1,475hp (1,100kW)

Armament: Two 12.7mm machine guns in nose, two 7.7mm machine guns in wings or two 20mm cannon under wings; 705lb (320kg) bomb load under wings

First Flight Date: 19 April 1942

The final word in the Macchi fighter dynasty, the C.205V again relied on a German engine – the outstanding DB 605A-1, this time – for its power. The resulting combination produced what many Allied pilots considered to be the best Italian fighter of the war. Despite Macchi's best efforts to streamline production of the Veltro (Greyhound) by using the C.200 wing and C.202 fuselage aft of the engine firewall, the unreliable supply of engines and other industrial problems caused by increased Allied bombing delayed the C.205's service entry until mid-1943. Indeed, by the time Italy surrendered in September of that year, only 177 had been delivered (66 of which were in frontline service).

The Veltro had made its combat debut during the ill-fated defence of Sicily and southern Italy, and following the capitulation, roughly 140 aircraft were used by the pro-German *Aeronautica Nazionale Repubblicana*, 25 were issued to the Luftwaffe's II./JG 77 in-theatre and a small number supplied to the Croatian Air Force. A further 112 C.205Vs

were built by Macchi through to May 1944, when persistent Allied air raids finally shut the production line down. The Veltro remained in Italian Air Force service until 1955, and 42 refurbished examples (mostly re-engined C.202s) were subsequently supplied to Egypt in 1948–49, where they fought Spitfire IXs and P-51Ds of the embryonic Israeli Air Force.

FIGHTER DETAILS



C.205V 155 of Tenente Colonnello Duilio Fanali, CO of 155° Gruppo, Aeronautica Co-Belligerante, Lecce, Italy, late 1943

Fanali commanded 155° Gruppo through to the Armistice, then led the *Aeronautica Co-Belligerante's* 51° Stormo. His C.205V was camouflaged in a typical 'smoke ring' scheme of the period, with heavy areas of retouching denoting the position of previous *Regia Aeronautica* markings – especially around the white fuselage band and the tail cross. The number '155' indicated the *gruppo* commanded by Fanali, and his personal marking on the fighter's nose consisted of a stylized dragon and the motto 'Mi Fanno un Baffo' ('I just don't care').



C.205V MM92287 18-1 of Capitano Adriano Visconti, CO of 1ª Squadriglia, 1° Gruppo Caccia, ANR, Campoformido, Italy, April 1944

This ANR C.205V was camouflaged in a Luftwaffe-inspired scheme consisting of two greys for the upper surfaces and side mottling, with light blue-grey undersides. Its detail markings were also standard for the period – ANR flashes on the fuselage and fin and 1^a *Squadriglia 'Asso di Bastoni'* ('Ace of Clubs') emblem on the nose. It was uncommon for pilots of I° *Gruppo Caccia* to be assigned personal aircraft, and apart from MM92287, ten-victory ace Adriano Visconti also flew 23-1 and 3-1 in early 1944.

MESSERSCHMITT Bf 109E

SPECIFICATIONS (Bf 109E-3)

Crew: Pilot

Length: 28ft 0in (8.55m)

Wingspan: 32ft 4.5in (9.87m)

Height: 8ft 2in (2.49m)

Empty: 4,189lb (1,900kg)

Max T/O: 5,875lb (2,665kg)

Max Speed: 348mph (560km/h)

Range: 410 miles (660km)

Powerplant: Daimler-Benz DB 601Aa

Output: 1,175hp (876kW)

Armament: Two 7.9mm machine guns in upper cowlings, two 20mm cannon in wings; some E-3s had additional 20mm cannon in propeller hub; fighter-bomber variant provision for carriage of one 551lb (250kg) bomb under fuselage

First Flight Date: June 1937 (Bf 109 V10)

Designed to meet a 1934 RLM requirement for a single-seat monoplane fighter, the original Bf 109 V1 was the winning competitor in a 'fly off' that involved three other designs from proven German aviation companies. Light and small, the first production-standard Bf 109s (B-1 models) to enter service in early 1937 proved their worth during the Spanish Civil War. By the time Germany invaded Poland in September 1939, the re-engined Bf 109E – nicknamed the 'Emil' – was rolling off the Messerschmitt production line in great quantity, the now-familiar airframe being paired up with the powerful Daimler-Benz DB 601. This combination had been tested as long ago as June 1937, when a pre-production aircraft had been flown with a carburetted DB 600 fitted in place of the D-model's Junkers Jumo 210Da, but the subsequent availability of the Bf 109E had been hampered by delays in the development of the appreciably more powerful Daimler-Benz engine.

However, these problems had been sorted out by early 1939.

Built in huge numbers (approximately 4,000 were completed between 1938 and August 1941) and in a great array of sub-variants for the fighter, reconnaissance, fighter-bomber and shipboard fighter roles, the Bf 109E proved to be the master of all of its European contemporaries bar the Spitfire I/II, to which it was considered an equal. Aside from fighting over Poland, the E-model was in the vanguard of the *Blitzkrieg* in the West in the spring of 1940, the Battle of Britain which followed, the occupation of the Balkans in 1941 and in the opening phases of the North African and Soviet campaigns. 'Emils' also served with many of Germany's allies in World War II, examples being supplied to Bulgaria, Croatia, Romania and Slovakia. A small number had also been exported to Spain, Switzerland (89 E-3as) and Yugoslavia (73 E-3as) in the late 1930s.

FIGHTER DETAILS



Bf 109E-4 <0+I of Oberleutnant Friedrich-Karl Müller, Stab III./JG 53, Le Touquet, France, October 1940

'Tutti' Müller shot down his first aircraft of the war with 8. *Staffel* on 27 May 1940, and his first of the Battle of Britain (his ninth overall) was not claimed until 5 September. He became the *Gruppen Technischer Offizier* (hence the unusual markings on this aircraft) a few days later. Müller's last victory of 1940 was his tenth, on 6 September. He was killed in a landing accident on 29 May 1944, by which point his tally had reached 140 victories.



Bf 109E-5 'Black 13' of Unteroffizier Heinrich Bartels, 8./JG 5, Petsamo, Finland, June 1942

Although III./JG 5 began re-equipping with Bf 109Fs in March 1942, it retained a small number of Bf 109Es throughout much of the remainder of the year. This particular example, bearing the 'Edelweiss' badge of 8. *Staffel*, was flown by Unteroffizier Heinrich Bartels early on in a career that would see him amass an overall total of 94 victories – equally split between East and West – before being killed in action engaging USAAF P-47s at the height of the Battle of the Ardennes.

MESSERSCHMITT Bf 109F

SPECIFICATIONS (Bf 109F-4)

Crew: Pilot

Length: 29ft 2.5in (8.90m)

Wingspan: 32ft 6.5in (9.92m)

Height: 8ft 6.5in (2.60m)

Empty: 5,259lb (2,390kg)

Max T/O: 6,872lb (3,117kg)

Max Speed: 388mph (624kmh)

Range: 528 miles (850km) with external tank

Powerplant: Daimler-Benz DB 601E-1

Output: 1,350hp (1,007kW)

Armament: One 20mm cannon in propeller hub and two 7.9mm machine guns in upper cowling; F-4B fighter-bomber variant provision for carriage of one 551lb (250kg) bomb under fuselage

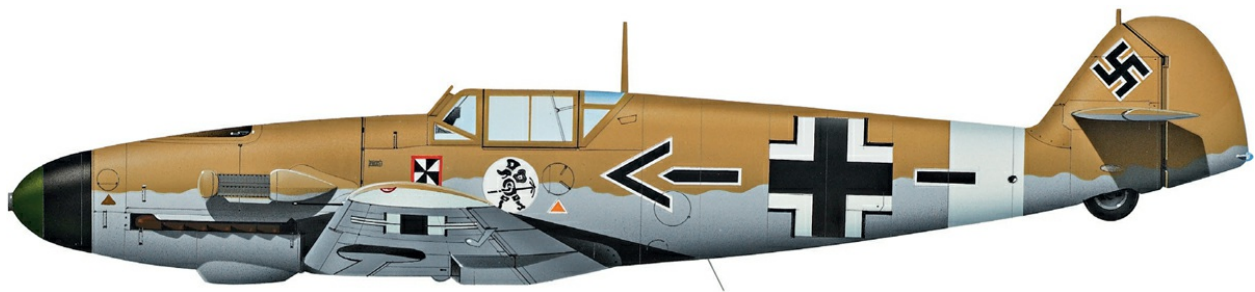
First Flight Date: July 1940

Developed in response to the availability of uprated DB 201N/E engines, the Bf 109F – christened the ‘Friedrich’ – also exhibited much aerodynamic reworking in comparison with the Bf 109E. The engine cowling was appreciably smoother, the propeller hub enlarged, wingtips rounded off, rudder reduced in size, tailplane struts deleted and the tailwheel made to retract. The ailerons and flaps were also improved and the armament restricted to a single cannon and two machine guns, all of which were nose/engine mounted. The resulting fighter was undoubtedly the best handling Bf 109 of them all – it was also the most aesthetically pleasing of the many variants produced.

The first production F-1s entered service on the Channel Front in October 1940, and almost immediately revised versions with better armament and more powerful engines were put into production. Although a joy to fly, the F-model was criticized for its lack of armament (particularly when compared with the Bf 109E-3/4s that they were in

the process of replacing), so some units carried out field modifications that saw two 20mm cannon added in gondolas beneath the wings. The Bf 109F equipped two-thirds of the *Jagdwaaffe* when the Germans launched their assault on the USSR in June 1941, and the fighter was also widely used in North Africa in 1941–42. However, the introduction of the definitive Bf 109G in the early summer of 1942 resulted in production of the F-model being immediately halted following the construction of approximately 2,200 aircraft. Aside from the Luftwaaffe, Croatia, Hungary, Romania and Spain all flew the Bf 109F in modest numbers.

FIGHTER DETAILS



Bf 109F-4/trop 'Black Chevron and Bar' of Leutnant Max-Bruno Fischer, *Gruppen*-Adjutant II./JG 3 'Udet', Sciacca, Sicily, February 1942

As the only *Gruppe* of JG 3 'Udet' to see service in the Mediterranean area, many of II./JG 3's tropicalized Bf 109F-4s wore the standard 'Africa' camouflage of overall desert tan uppersurfaces combined with light blue undersides, plus white aft fuselage theatre band (and wingtips). As well as retaining the II. *Gruppe* badge, Leutnant Fischer's machine also displays his personal emblem – an unidentified cartoon-like figure (of a mouse carrying a sack and umbrella?), the significance of which is no longer known.



Bf 109F-4/B 'Yellow 7' of Sgt Dezso Szentgyörgyi, 1/1 'Dongó' Fighter Squadron, Poltava, Soviet Union, late February 1943

The Royal Hungarian Air Force began to receive second-hand Bf 109Fs on the Eastern Front in late 1942, these being passed on to them from German repair depots. Generally, such aircraft assigned to units operating alongside the Luftwaffe in the frontline sported code numbers to make their identification easier. As weather conditions improved in 1943, so the winter camouflage that had adorned the Bf 109Fs became redundant and regulation markings were reapplied. The Hungarians were flying fighter-bomber missions at this time.

MESSERSCHMITT Bf 109G/K

SPECIFICATIONS (Bf 109G-6)

Crew: Pilot

Length: 29ft 7.5in (9.03m)

Wingspan: 32ft 6.5in (9.92m)

Height: 8ft 2.5in (2.50m)

Empty: 5,893lb (2,673kg)

Max T/O: 7,496lb (3,400kg)

Max Speed: 386mph (621km/h)

Range: 620 miles (998km) with external tank

Powerplant: Daimler-Benz DB 605AM

Output: 1,800hp (1,342kW)

Armament: One 20mm cannon in propeller hub and two 13mm machine guns in upper cowling, two 20mm cannon under wings; provision for various underfuselage and underwing stores

First Flight Date: late summer 1941

The Bf 109G, known as the 'Gustav', combined the F-model's refined airframe with the larger, heavier and considerably more powerful 1,455hp DB 605 engine to produce the most successful Messerschmitt fighter variant of them all. Cockpit pressurization was also introduced for the first time with the G-1, although most later sub-variants lacked this feature. Produced in staggering numbers from early 1942 until war's end, more than 23,500 G-models and around 750 Bf 109Ks were constructed in total – including no fewer than 14,212 in 1944. Numerous modifications to the basic G-1 were introduced either in the factory (as *Umrüst-Bausätze* factory conversion sets) or in the field (*Rüstsätze*), and these included provision for extra armament, additional radios, introduction of a wooden tailplane, the fitting of a lengthened tailwheel and the installation of the MW50 water/methanol-boosted DB 605D engine.

In an attempt to standardize the equipment of the frontline force,

Messerschmitt produced the Bf 109G-6 in late 1942, and this model included many of these previously ad hoc additions. Unfortunately, the continual addition of weighty items like wing cannon and larger engines to the once slight airframe of the Bf 109 eliminated much of the fighter's manoeuvrability, and instead served to emphasize the aircraft's poor low-speed performance, lateral control and ground handling. The final variant to enter widespread service with the Luftwaffe was the Bf 109K-4, which incorporated all the best parts of the late-build G-series subtypes (which went up to the G-14), including the improved vision hood, extended tailplane and tailwheel, and DB 605DCM engine. As with previous Bf 109 variants, the G-model was also supplied to other Axis air forces – namely Bulgaria, Croatia, Finland (whose pilots achieved a kill ratio of 25-to-1 with the fighter against the Red Air Force), Hungary, Italy, Romania and Slovakia – and 14 were supplied to Switzerland.

FIGHTER DETAILS



Bf 109G-6/R6 Wk-Nr. 18105 'Black 12' of Unteroffizier Karl-Heinz Böttner and Unteroffizier Helmut Schwarzenhölzer, 8./JG 77, Chilivani, Sicily, July 1943

Typical of the heavily armed Bf 109G *Kanonenboot* of JG 77 that engaged Allied heavy bombers targeting Sicily in the summer of 1943, this aircraft has the *Geschwader's* 'Herz-As' (Ace of Hearts) emblem and III. *Gruppe's* unusually sized and located aircraft code numbers. The insignia forward of the aircraft number is that of III./JG 77, flanked with the titling 'Wander-Zirkus Ubben' (the 'Ubben Travelling Circus') named after the *Kapitän* of 8. *Staffel* and subsequent *Kommandeur* of III. *Gruppe*, Major Kurt Ubben.



Bf 109G-6/AS 'White 14' of III./JG 1, Paderborn, Germany, May 1944

This high-altitude fighter (which had its performance boosted by MW50 water/methanol) of III./JG 1, complete with an Erla hood and larger tail, was finished in a green/brown-violet mottle and mottled greys. The winged '1' *Geschwader* emblem was applied to the nose, and beneath the aircraft's individual number '14' in white were the overpainted remains of a '3'. The red fuselage band was overlaid with a high white vertical bar, denoting a machine of III./JG 1. Note also the unusually small Swastika on the fin.

MESSERSCHMITT Bf 110

SPECIFICATIONS (Bf 110C-4)

Crew: Pilot, radio/radar operator and rear gunner

Length: 39ft 8.5in (12.10m)

Wingspan: 53ft 4.75in (16.27m)

Height: 11ft 6in (3.50m)

Empty: 9,920lb (4,500kg)

Max T/O: 15,300lb (6,940kg)

Max Speed: 349mph (561km/h)

Range: 565 miles (909km)

Powerplants: two Daimler-Benz DB 601A-1 engines

Output: 2,200hp (1,640kW)

Armament: Two 20mm cannon and four 7.9mm machine guns in nose cowling, 7.9mm machine gun in rear cockpit; C-4/B fighter-bomber variant, maximum load of 1,102lb (500kg) bombs carried externally; C-7, maximum load of 2,205lb (1,000kg) bombs

First Flight Date: 12 May 1936

Designed in 1934–35 in response to a Luftwaffe requirement for a high-speed, long-range, heavily armed twin-engined fighter, the Messerschmitt Bf 110 *Zerstörer* (destroyer) fulfilled all these criteria. Seen as the ultimate bomber escort, capable of sweeping the skies clear of enemy fighters, the Bf 110 relied more on its firepower than manoeuvrability to survive in combat. Too late to participate in the Spanish Civil War, the Daimler-Benz DB 601-powered Bf 110C made the aircraft's combat debut over Poland in September 1939, where it dominated the skies in an environment of overwhelming Luftwaffe air superiority. These successes continued throughout the 'Phoney War' and into the early days of the *Blitzkrieg* in the West, but come the Battle of Britain, serious flaws in the *Zerstörer* concept were graphically exposed. The large twin-engined machine, although powerfully armed, was simply no match for the more agile Spitfire and Hurricane. As if to prove this

point, in the latter stages of the Battle of Britain Bf 109s were having to escort the fighter escorts!

Following the loss of more than 200 Bf 110s during the campaign, the dayfighter role was given over almost exclusively to the single-seat *Gruppen*, and the Messerschmitt 'twin' was sent further afield to operate either on less hostile fronts like the Balkans, the Mediterranean and North Africa, or in the rapidly developing nightfighter role.

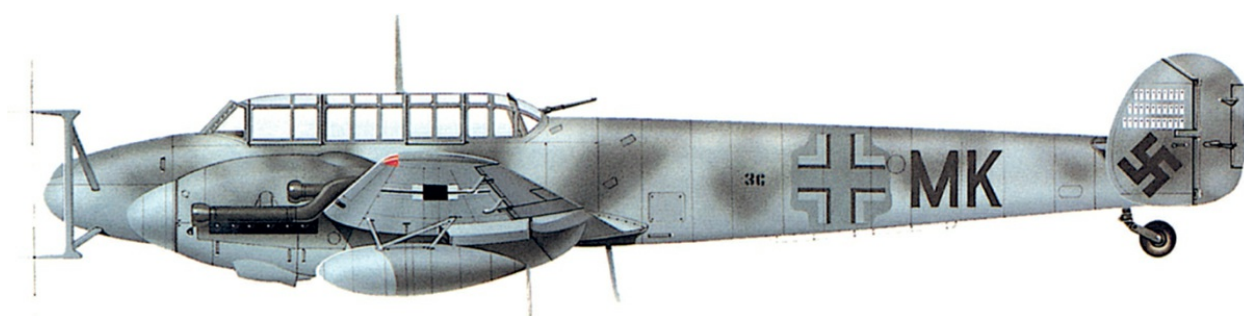
The latter mission was ideally suited to a big fighter like the Bf 110, and by 1943 the dedicated, radar-equipped, G-model accounted for around 60 per cent of the overall *Nachtjagd* force. The most effective nightfighter variant was the G-4, which had more powerful DB 605B-1 engines, FuG 212 *Lichtenstein* C-1, SN-2 or 221a radar and various cannon fits, depending on the sub-type. The Bf 110G-4 was also the aircraft of choice for leading nightfighter aces Heinz-Wolfgang Schnauffer (121 victories) and Helmut Lent (102 victories). So effective was the Bf 110G in this nocturnal role that the fighter remained in production until March 1945, by which point 6,050 *Zerstörer* had been built.

FIGHTER DETAILS



Bf 110G 'S9+IC' of Hauptmann Günther Tonne, *Gruppenkommandeur* II./ZG 1, Byelgorod-II, Ukraine, June 1942

This II./ZG 1 aircraft displays the elaborate 'Wasp' nose marking which dated back to when it was operating as III./ZG 76 in Norway. Designed as a *Gruppe* badge by Richard Marchfelder, and featuring three small wasps over a stylized cloud, it was developed into the striking motif to compete with II./ZG 76's distinctive 'sharkmouth'. Note the yellow Eastern Front theatre band encircling the fuselage aft of the wing root, and Günther Tonne's 17 victory bars, the last eight bearing Soviet stars, on the fin.



Bf 110G '3C+MK' of Oberleutnant Martin Becker, 2./NJG 6, Florennes, Belgium, spring 1944

This FuG 220 *Lichtenstein* SN-2b-equipped aircraft was flown by ace Martin 'Tino' Becker for much of 1944, during which time he scored 41 of his 56 victories. Thirty of his kills are marked on the tail of the nightfighter, Becker having claimed four Lancasters and three Halifaxes destroyed between 25 and 29 April 1944 to reach this tally. A recipient of the Knight's Cross, he survived the war, having flown more than 110 missions.

MESSERSCHMITT Me 262

SPECIFICATIONS (Me 262A-1A)

Crew: Pilot (single-seat fighter/fighter-bomber) or pilot and radar operator (two-seat nightfighter)

Length: 34ft 9.5in (10.60m)

Wingspan: 41ft 0.5in (12.51m)

Height: 11ft 6.75in (3.83m)

Empty: 9,742lb (4,420kg)

Max T/O: 14,101lb (6,396kg)

Max Speed: 540mph (870km/h)

Range: 652 miles (1,050km)

Powerplants: two Junkers Jumo 004B-1, -2 or -3 turbojet engines

Output: 3,960lb st (17.8kN)

Armament: A-1a, four 30mm cannon in nose and provision for 24 R4M underwing rockets; A-2a, four 30mm cannon plus 1,102lb (500kg) external bombs; B-1a/U1, four 30mm cannon

First Flight Date: 18 July 1942 (first all jet-powered flight)

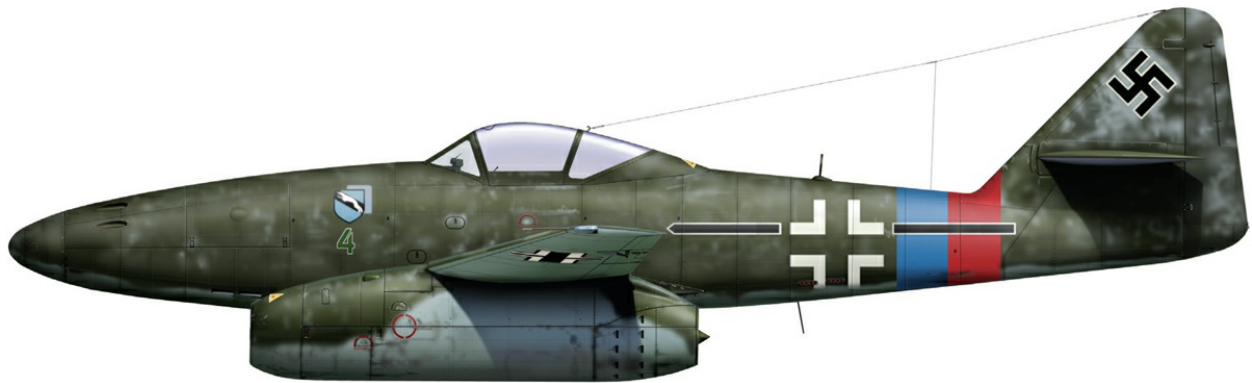
The world's very first operational jet fighter, the Me 262 was also the most advanced aircraft of its generation to actually see combat. Design work on the Messerschmitt commenced as early as 1938, and the first tailwheeled prototype, fitted with a nose-mounted Junkers Jumo 210 piston engine, completed its maiden flight on 4 April 1941. Unfortunately for Messerschmitt, the aircraft's revolutionary turbojet powerplants failed to keep pace with the company's airframe development, and it was not until 18 July 1942 that the first successful flight was made with the preferred Junkers Jumo 003 turbojets installed – the BMW 003 had initially been trialled, but persistent failures had seen it discarded in early 1942.

With the engine/airframe combination at last sorted out, political interference from no less a figure than the *Führer* himself saw the programme side-tracked for a number of months as he insisted that the aircraft be developed as a bomber. Sense finally prevailed in early 1944,

and the first aircraft to reach the frontline saw combat in August of that year. In the vanguard of a new crop of 'wonder weapons' that were issued to the Luftwaffe from mid-1944, the Me 262 was far in advance of anything the Allies had even in the experimental phase. This in turn meant the fighter could perform its mission with relative impunity.

Despite Germany being bombed virtually 24 hours a day during the final 12 months of the war, more than 1,400 Me 262s were completed by Messerschmitt, and a further 500 unfinished airframes were lost in air raids. Engine reliability, fuel shortages and unrealistic operational taskings restricted the frontline force to around 200 jets at any one time, but these nevertheless accounted for more than 200 Allied aircraft destroyed (*Jagdwaaffe* claims exceeded 745 victories for the Me 262!) during day and night interceptions. Flying with eight units, including JG 7, *Jagdverband* 44, NJG 11 and *Ergänzungsjagdgeschwader* 2, 28 pilots 'made ace' flying the jet.

FIGHTER DETAILS



Me 262A-1a 'Green 4' of Major Theodor Weissenberger, *Geschwaderstab* JG 7, Brandenburg-Briest, Germany, February–March 1945

This Me 262 carries extended horizontal bars in black, outlined in white, denoting the *Kommodore's* aircraft, as well as JG 7's blue and red fuselage Defence of the Reich identification band. The upper third of light blue on the *Geschwader's* running fox emblem is unusually large, or the whole emblem has been partially applied over another. A 200-victory ace when Weissenberger joined JG 7, he was credited with seven B-17s and a P-51 destroyed in March and April 1945



Me 262A-1a White '1' of JV 44, Munich-Riem and Innsbruck-Hötting, Germany, April–May 1945

Quite how this aircraft ended up with JV 44 is not known, for it would appear to have been at one time an aircraft of *Kommando Nowotny*, perhaps even the test unit *Erprobungskommando 262*. The small white 'S' painted on the very rear fuselage beneath the horizontal stabilizer is evidence perhaps of a '*Schul*' (school) machine, which suggests this may have been an aircraft joining JV 44 from III. Gruppe of *Ergänzungsjagdgeschwader 2* – the latter was a replacement training unit.

MESSERSCHMITT Me 163B KOMET

SPECIFICATIONS (Me 163B)

Crew: Pilot

Length: 19ft 2.25in (5.85m)

Wingspan: 30ft 7.25in (9.33m)

Height: 9ft 1in (2.77m)

Empty: 4,206lb (4,420kg)

Max T/O: 9,502lb (4,310kg)

Max Speed: 593mph (954km/h)

Range: maximum powered endurance of eight minutes

Powerplant: Walter HWK 109-509B

Output: 3,750lb st (16.8kN)

Armament: two 30mm cannon in wing roots

First Flight Date: 23 June 1943 (Me 163B)

The only rocket-powered fighter to see combat in World War II, the very high performance Me 163B Komet was developed by Dr Alexander Lippisch from his pre-war series of tailless gliders. The first rocket-powered aircraft to be flown was the DFS 194, which carried out a series of very short flights in 1940. By this time Dr Lippisch and his team had come under the control of Messerschmitt, and this partnership resulted in the Me 163A, which achieved a top speed of 624mph during trials staged in the summer of 1941. Messerschmitt drastically revised the design to produce the frontline-capable Me 163B in early 1943, and after lengthy delays waiting for a reliable Walter HWK 109-509B rocket motor to become available, the prototype completed its first flight on 23 June. The Walter engine was capable of outstanding performance, but ran for just eight minutes.

To achieve the previously unheard of 15,950ft per minute rate of climb (the Me 262 could achieve 3,937ft per minute), the Me 163B relied on a volatile fuel combination of T-stoff (hydrogen-peroxide and water) and

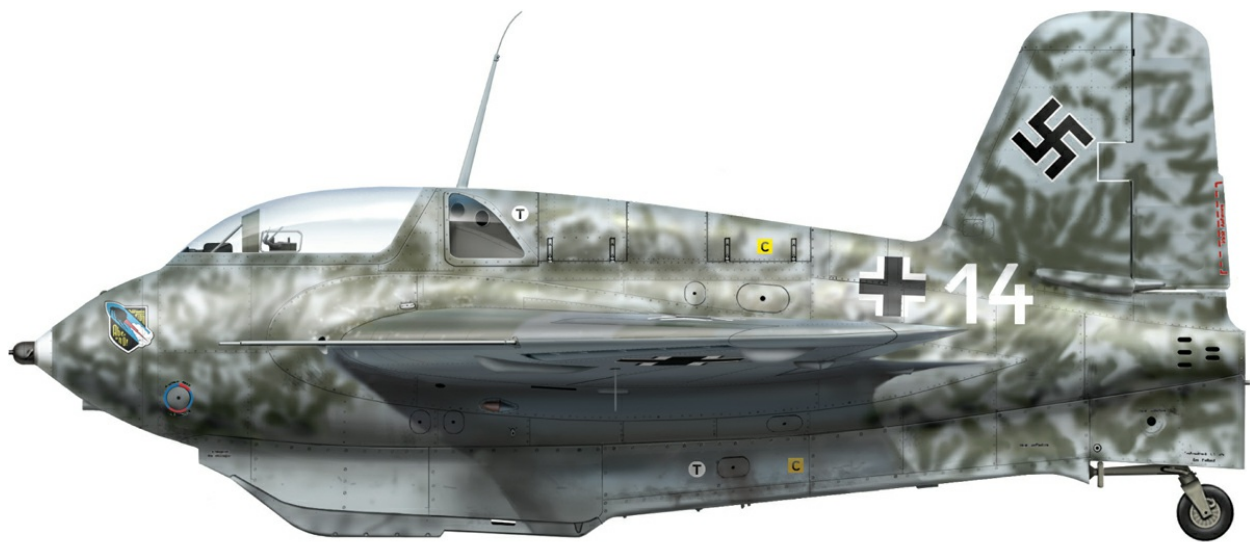
C-stoff (hydrazine hydrate and methyl alcohol) for the HWK 109-509B. In order to save weight, Messerschmitt dispensed with a fixed undercarriage, choosing instead to launch the aircraft via a jettisonable trolley and then rely on the pilot's skill to land using a fixed skid. Just one *Gruppe* of JG 400 went into action with the aircraft (of which approximately 355 examples were built) from late July 1944, the rocket-powered fighter having actually made its combat debut with *Erprobungskommando* (Test Unit) 16 two months earlier. Although the Me 163B would remain in the frontline through to the last days of the conflict, just 16 kills – mostly four-engined bombers – were credited to Komet pilots. By late April 1945 JG 400 had been disbanded and its pilots sent to Me 262 units.

FIGHTER DETAILS



Me 163B Wk-Nr. 163100061 'Yellow 1' of 7./JG 400, Stettin-Altdamm, Germany, October 1944

Built by Messerschmitt and completed by Klemm at Jesau, 'Yellow 1' was delivered to Wittmundhafen for testing prior to being handed over to 1./JG 400. The aircraft was subsequently handed over to 7./JG 400 when it was formed in Stettin-Altdamm in October 1944. Flown by Leutnant Reinhard Opitz, *Staffelkapitän* of 7./JG 400, at Nordholz and Husum in April 1945. 'Yellow 1' never saw combat.



Me 163B 'White 14' of 1./JG 400, Brandis, Germany, February 1945

The camouflage of this aircraft suggests it was built by Klemm. This Komet was one of the few painted with 1./JG 400's 'Flying Flea' emblem, which adorned only the port side of these aircraft.

MIKOYAN-GUREVICH MiG-1/3

SPECIFICATIONS (MiG-3)

Crew: Pilot

Length: 26ft 9in (8.15m)

Wingspan: 33ft 9.5in (10.30m)

Height: 8ft 8in (2.64m)

Empty: 5,952lb (2,602kg)

Max T/O: 7,385lb (3,350kg)

Max Speed: 398mph (640km/h)

Range: 510 miles (820km)

Powerplant: Mikulin AM-35A

Output: 1,332hp (993kW)

Armament: One 12.7mm and two 7.62mm machine guns in nose, two 12.7mm machine guns under or in wings; maximum load of 485lb (220kg) bombs or six 82mm rockets under wings

First Flight Date: 5 April 1940 (MiG-1)

Created by ex-Polikarpov designers Ivanovic ('Ayrton') Mikoyan and Mikhail Gurevich, the MiG-1/3 family of fighters was built to satisfy a Soviet Air Force requirement for just such an aircraft. Established in 1939, the company flew the first of three prototype MiG-1s on 5 April 1940. Despite the fighter (constructed of mixed steel tube and wooden construction) exhibiting several unenviable handling characteristics, it was approved for limited production. In an effort to eradicate as many of these problems as possible, MiG swiftly reworked their design and came up with the MiG-3, which solved almost all of the handling woes. The revised fighter benefited from having had its engine repositioned further forward, the dihedral on its outer wing panels increased, the fuselage decking reduced to help aid all-round vision, the installation of better armour protection, boosted fuel capacity, and its structure physically strengthened and simplified to ease construction.

Despite all these modifications, the MiG-3 actually entered frontline

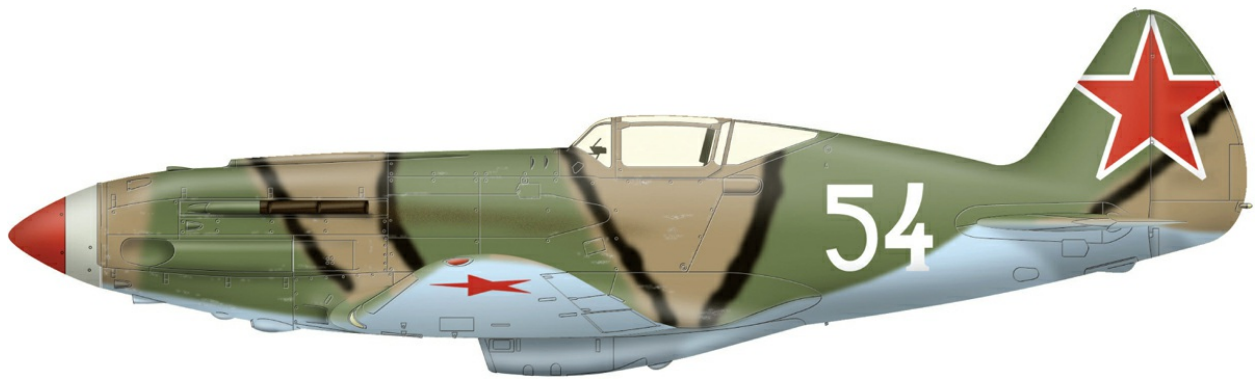
service just weeks after the MiG-1 (of which approximately 100 examples were built) in April 1941. Although the MiG-3 was reputedly the world's fastest fighter then in production, it suffered badly in the opening stages of the war between Germany and the USSR. No fewer than 1,432 were shot down in the first six months of the war, with a good number of these losses being inflicted on MiG-3s hastily pressed into service as fighter-bombers. This resulted in Soviet pilots being forced into aerial engagements at low level, where the aircraft's manoeuvrability and armament were found to be lacking – the MiG-3 had been designed as a high-altitude fighter. Surviving examples from the 3,120 that had been built in 1940–41 (a further 42 were completed from spares in 1942) were eventually switched to air defence and armed reconnaissance work, before being replaced in the frontline in early 1943.

FIGHTER DETAILS



MiG-3 of the 122nd IAP, 33rd Army Air Force of the Western Front, Vnukovo, Soviet Union, February 1942

This aircraft, which displays the slogan 'For the Party of the Bolsheviks', was assembled by the workers of Moscow's Factory No 1 using parts that had been left behind when the rest of the plant was evacuated to the east. It was delivered to the 172nd IAP of the 33rd Army Air Force of the Western Front on 23 February 1942 and was soon transferred to the 122nd IAP. This unit was based at Vnukovo airfield near Moscow.



MiG-3 of Capt Konstantin Nikonov, 7th IAP, Black Sea Fleet Air Force, Mikha-Tskhakaya, the Caucasus, July 1943

This aircraft was one of 15 surplus MiG-3s from the Moscow Air Defence Forces ferried by combat veteran Capt Nikonov to the Caucasus for the conversion training of new pilots. He was killed during a mock dogfight on 6 July 1943 when the fighter crashed near Mikha-Tskhakaya airfield. Subsequent investigation revealed that the accident had been caused by the delamination of the fighter's plywood skin, which had been adversely affected by the high humidity of the Kolkhida valley.

MITSUBISHI A5M

SPECIFICATIONS (A5M4)

Crew: Pilot

Length: 24ft 9.75in (7.56m)

Wingspan: 36ft 1in (11.00m)

Height: 10ft 8.75in (3.27m)

Empty: 2,784lb (1,263kg)

Max T/O: 4,017lb (1,822kg)

Max Speed: 270mph (434km/h)

Range: 746 miles (1,200km) with external tanks

Powerplant: Nakajima Kotobuki 41 Kai

Output: 785hp (585kW)

Armament: Two 7.7mm machine guns in nose; provision for two underwing 66lb (30kg) bombs

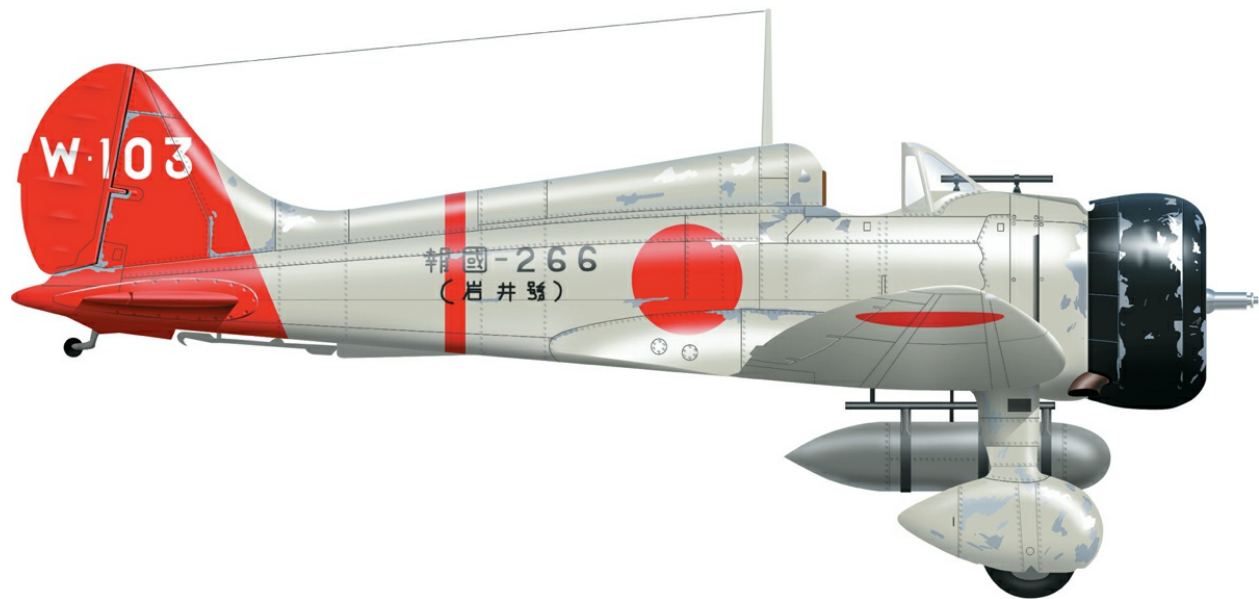
First Flight Date: 4 April 1935

The first monoplane fighter built for the IJNAF, the agile Mitsubishi A5M proved to be very popular with pilots in the latter half of the 1930s, perfectly bridging the gap between the biplane fighters of the past and the high performance A6M Zero-sen of World War II. Charged with securing air superiority over the forces tasked with invading China and Manchuria during the Sino-Japanese War of 1937–40, the first A5M1s had entered service on the eve of the conflict. A version of the fighter was also offered to the IJAAF , but the latter's obsession with highly manoeuvrable designs resulted in Nakajima's Ki-27 being chosen instead.

Re-engined and aerodynamically 'cleaned up' in the late 1930s, the A5M4 was the final production version of the fighter. Reaching frontline units in 1938, the aircraft was capable of carrying an external fuel tank or small bombs. Mitsubishi's production of the A5M4 ceased in 1940, although a small number continued to be built by satellite factories until 1942 – 1,094 had by then been completed. Given the Allied reporting

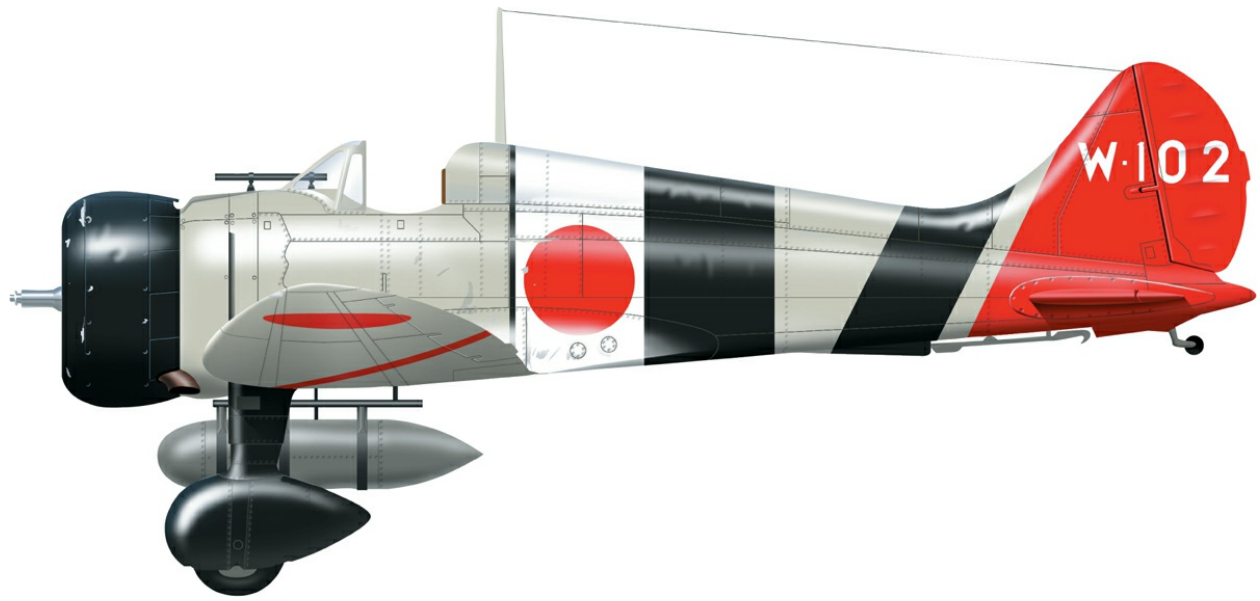
name 'Claude', the A5M4 was still very much a frontline fighter in December 1941, and carrier-based examples participated in several early battles, including the invasion of the Philippines and the Battle of the Coral Sea. Replaced by the vastly superior Zero-sen in 1942, the A5M lingered on in the single- and dual-seat fighter training role (103 examples of the latter aircraft, designated the A5M4-K, were built by the Naval Ohmura Arsenal) until the final examples were destroyed during the kamikaze attacks of 1944–45.

FIGHTER DETAILS



A5M4 of PO2c Hideo Oishi, *Soryu* Fighter Squadron, East China Sea, November 1938

The inscription on the fuselage of this aircraft indicates that the fighter was presentation aircraft No 266, which was purchased by a Mr Iwai and donated to the IJNAF. Having experienced combat with the A5M4 over China, PO2c Oishi would claim a number of victories flying the first A6M2s committed to the campaign in 1940–41.



A5M4 of PO1c Matsui Hagiri, *Soryu* Fighter Squadron, Sea of Japan, summer 1939

This aircraft was routinely flown by ace and future IJNAF test pilot PO1c Matsui Hagiri, who would also swap the A5M4 for an early A6M2. His exploits with the new fighter helped to convince other IJNAF pilots that the A6M was a worthy replacement for the A5M, which up until then had easily prevailed in mock dogfights between the two Mitsubishi types.

MITSUBISHI A6M2/3 ZERO-SEN

SPECIFICATIONS (A6M2 MODEL 21)

Crew: Pilot

Length: 29ft 8.75in (9.06m)

Wingspan: 39ft 4.25in (12.00m)

Height: 10ft 0.15in (3.05m)

Empty: 3,704lb (1,680kg)

Max T/O: 6,164lb (2,796kg)

Max Speed: 331mph (533km/h)

Range: 1,930 miles (3,105km) with external tanks

Powerplant: Nakajima NK1C Sakae 12

Output: 950hp (708kW)

Armament: Two 7.7mm machine guns in nose, two 20mm cannon in wings; provision for two underwing 132lb (60kg) bombs, or one 551lb (250kg) bomb under fuselage for kamikaze attacks

First Flight Date: 1 April 1939

Undoubtedly the most famous Japanese combat aircraft of World War II, the A6M Zero-sen was developed by Mitsubishi's chief designer, Jiro Horikoshi, to meet a demanding IJNAF requirement for a replacement to the successful A5M of the late 1930s. Officially designated the Navy Type 0 Carrier Fighter Rei-sen ("Zero Fighter"), the A6M boasted an impressive mix of high performance, long range and superb manoeuvrability, all in a lightweight and modestly powered airframe. The latter was made of a new top-secret aluminium alloy called extra super duralumin that had been created by Sumitomo Metal Industries in 1936.

The first two prototype A6M1s were fitted with the 780hp Mitsubishi Zuisei 13 engine, and a switch was soon made to the 940hp Nakajima Sakae 12, variants of which it retained until war's end. Redesignated the A6M2, the first production-standard Model 11s were delivered to the IJNAF in July 1940. Barely two months later, the Zero-sen went into action over China when 13 examples tangled with 27 Polikarpov I-15s

and I-16s and shot them all down without suffering a single loss. Production switched to the Model 21 at this time, the variant having folding wingtips for carrier flightdeck elevator compatibility. A6M2s made up two-thirds of the IJNAF's fighter force by 7 December 1941, and 135 Zero-sens took part in the Pearl Harbor raid.

By then the re-engined A6M3 Model 32 was just entering production, the aircraft being powered by a supercharged Sakae 21 rated at 1,130hp. This variant also dispensed with the folding wingtips, leaving the wings with a 'squared off' appearance that gave the fighter a better roll rate and higher speed in the dive due to reduced drag. The Model 32 was also marginally faster than the Model 21, although the Sakae 21 used more fuel, reducing the aircraft's range by 620 miles. A6M3 production ended in mid-1943 after the delivery of just 343 aircraft – more than 1,600 A6M2s had also been built by then. The Model 21 remained in service until war's end, with large numbers of aircraft being expended in kamikaze attacks from October 1944.

FIGHTER DETAILS



A6M2 Model 11 3-112 of the 12th Kokutai, Hankow, China, 1941

The impressive scoreboard of 28 victories on the tail of this seventh production Model 11 was accumulated by the various 12th *Kokutai* pilots who flew it on different missions in China in 1940–41 – including Lt Minoru Suzuki, who was unofficially credited with 8–10 victories. The curious two-tone effect of the paint seen on this aircraft was probably caused by protective covers placed over the canopy and mid-fuselage area.



A6M3 Model 32 2181 of the 2nd *Kokutai*, Lae, New Guinea, late 1942

This A6M3, with Houkou subscription dedication 877 from Hannan Fishery Products, was delivered to the IJNAF on 7 June 1942. Two months later, the 2nd *Kokutai* was equipped with 16 A6M3s, but by October, despite additional reinforcements it was down to just eight aircraft – 2181 was one of those surviving fighters.

MITSUBISHI A6M5/7 ZERO-SEN

SPECIFICATIONS (A6M5 MODEL 52)

Crew: Pilot

Length: 29ft 11in (9.12m)

Wingspan: 36ft 1in (11.00m)

Height: 11ft 6in (3.50m)

Empty: 4,136lb (1,876kg)

Max T/O: 6,025lb (2,733kg)

Max Speed: 351mph (565km/h)

Range: 1,194 miles (1,921km)

Powerplant: Nakajima NK1F Sakae 21

Output: 1,130hp (843kW)

Armament: Two 20mm cannon and two 13mm machine guns in wings, one 13mm machine gun in the nose; provision for one 1,102lb (500kg) bomb under fuselage

First Flight Date: August 1943 (A6M5)

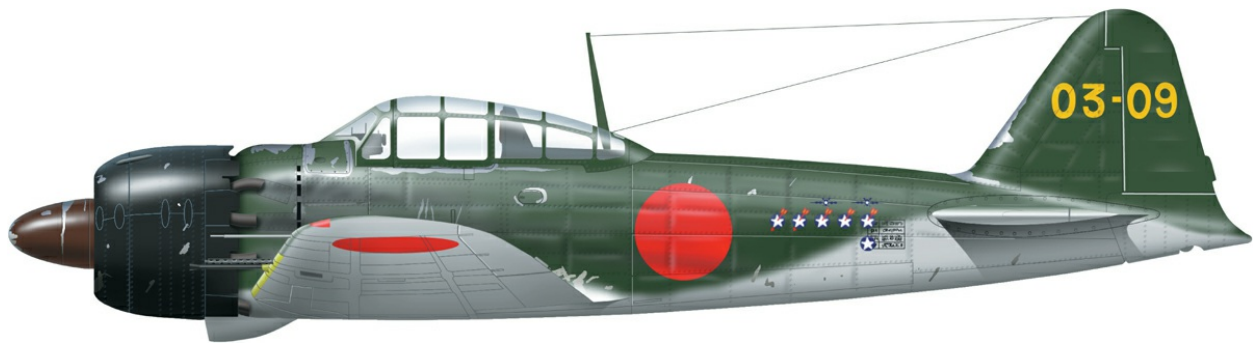
The most-produced (approximately 6,000 built) of all Zero-sen variants, the A6M5 was initially developed by Mitsubishi as a 'stop gap' fighter until the carrier-capable A7M Reppu was cleared for production. However, terminal delays with the latter fighter, and ongoing problems with Mitsubishi's land-based J2M Raiden, resulted in the A6M5 remaining in production until the end of the conflict. Retaining the airframe, powerplant and armament of the A6M3, the 'new' Zero-sen was, however, fitted with modified flaps and ailerons and thickened wing skinning to allow pilots to attain greater terminal speeds while attempting to dive away from Allied fighters.

The A6M5 started to reach frontline units in October 1943, and by March 1944 the first sub-variants were rolling off the production line. Modifications included even thicker wing skinning, improved ammunition feed for the wing and nose guns and armour protection for the pilot and fuel tanks. All these additions added weight to the Zero-sen,

which was still powered by the modestly uprated Sakai 21. By now thoroughly out-classed by US Navy and USAAF fighters in-theatre, hundreds of A6M5s were lost during the battles of 1944–45.

In an attempt to redress the balance, Mitsubishi fitted a methanol-water injected NK1E Sakai 31 – rated at 1,210hp – to an A6M5 Model 52c airframe to produce the A6M7 Model 63. Primarily designed as a dedicated dive-bomber, the aircraft had a reinforced vertical stabilizer and a special centreline rack for the carriage of 551lb or 1,102lb bombs. Limited production commenced in May 1945, but only 150 had been completed by the time Japan capitulated.

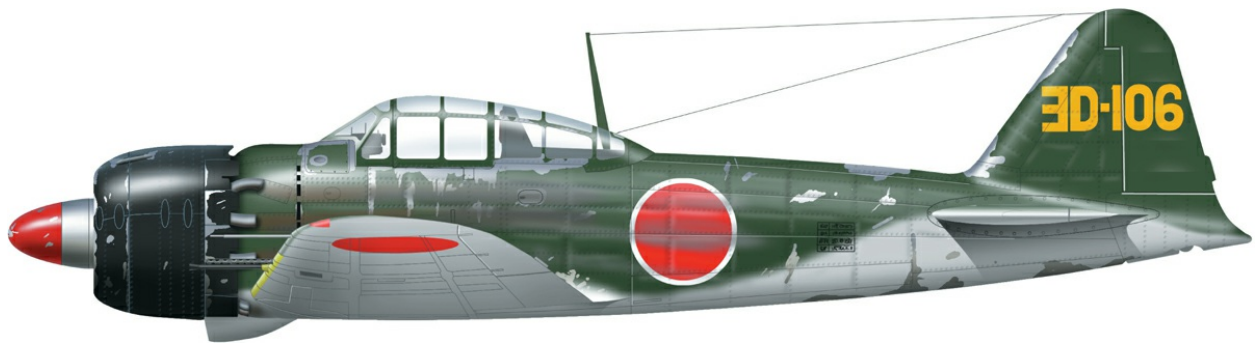
FIGHTER DETAILS



A6M5 Model 52 of CPO Takeo Tanimizu, 203rd *Kokutai*, Kagoshima Prefecture, Japan, June 1945

This aircraft had a very detailed victory tally marked onto its fuselage consisting of two head-on silhouettes of B-29s, representing one probable and another shot down jointly by CPO Takeo *Tanimizu* and CPO Tetsuzo Iwamoto, and five stars pierced with arrows, indicating kills. Finally, the single unpierced star denoted a probable, Tanimizu having these markings applied to inspire the less experienced pilots in his unit. The broken-up hulk of this aircraft was photographed in a hangar in Nagasaki in November 1945

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A6M7 Model 63 of Lt Yutaka Morioka, 302nd *Kokutai*, Atsugi, Japan, August 1945

Lt Morioka was at the controls of this aircraft when he and his two wingmen tried to thwart the rescue of downed P-51 Mustang pilot Capt Ed Mikes, who had parachuted into Tokyo Bay on 3 August 1945. Morioka downed the P-51 of 2Lt John J Coneff, who had been covering Mikes, and before returning to Atsugi the three Zero-sen pilots strafed the downed American in his lifeboat.

Mikes escaped with minor splinter wounds and was soon rescued.

MITSUBISHI J2M RAIDEN

SPECIFICATIONS (J2M3)

Crew: Pilot

Length: 32ft 7.5in (9.94m)

Wingspan: 35ft 5.25in (10.80m)

Height: 12ft 11.25in (3.94m)

Empty: 5,423lb (2,460kg)

Max T/O: 7,573lb (3,435kg)

Max Speed: 363mph (584km/h)

Range: 1,179 miles (1,898km)

Powerplant: Mitsubishi MK4A-R Kasei 23a

Output: 1,800hp (1,342kW)

Armament: Four 20mm cannon in wings; provision for two 132lb (60kg) bombs under wings

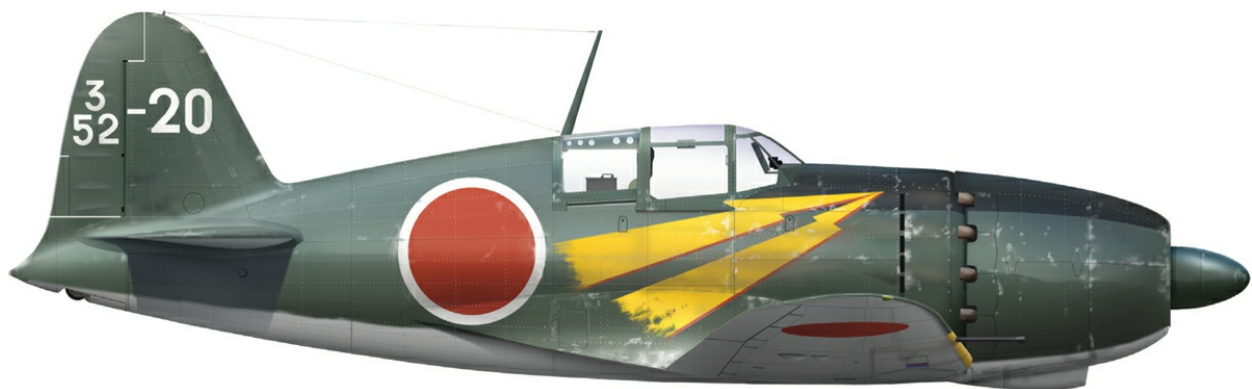
First Flight Date: 20 March 1942

Built as a land-based naval interceptor optimized for speed and rate of climb, rather than manoeuvrability, the J2M Raiden (Lightning Bolt) was potentially an outstanding fighter that remained plagued by technical problems and industrial upheaval throughout its brief production life. Initial development work started in October 1938, but Mitsubishi's technical emphasis was firmly focused on the A6M Zero-sen, which was also in its embryonic stages at that point. When work on the J2M was finally given the go ahead in early 1941, engineers soon got bogged down with problems associated with the cooling system for the Kasei 13 engine, as well as technical issues associated with the laminar flow wing. A change of engines to the Kasei 23a did little to improve reliability, and by March 1943 only 11 production J2M2s had been delivered to the IJNAF.

Once in service, the Raiden – given the Allied reporting name ‘Tony’ – suffered several accidents due to jammed controls, and by the time this had been sorted out in early 1944, fewer than 150 J2Ms had been built.

The J2M3 was introduced into service soon after this, and limited production of this variant allowed several *sentai* to re-equip with the Raiden. Although never available in the numbers hoped for by the IJNAF (only 493 were built by Mitsubishi and 129 by the Koza Naval Air Arsenal), the J2M nevertheless proved to be a relatively effective home defence fighter in the final year of the war.

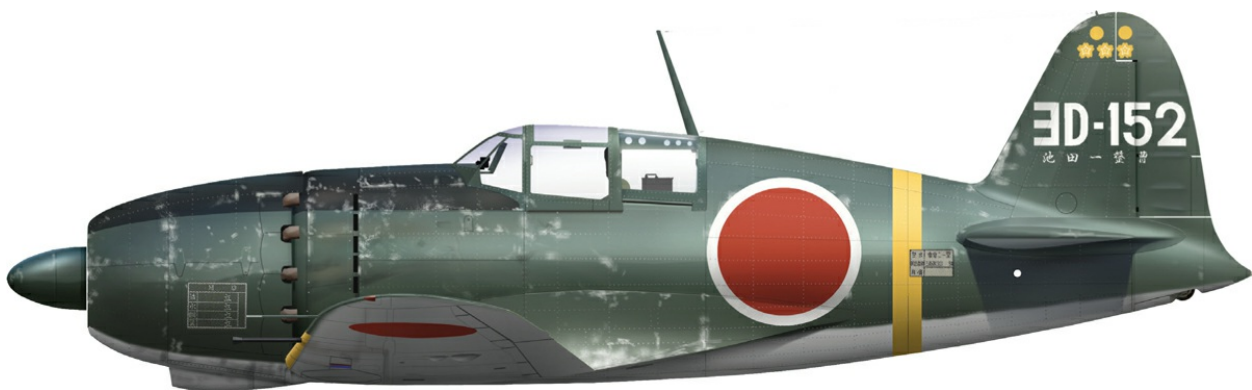
FIGHTER DETAILS



J2M3 Raiden 21 '352-20' of Lt(jg) Yoshihiro Aoki, 352nd *Kokutai*, Omura, Japan, March 1945

Officially known as the Navy Interceptor Fighter Thunderbolt (Raiden) in IJNAF service, the J2M was rarely seen in anything but standard late war colours. However, at least two J2M3s serving with the 352nd *Kokutai* were adorned with 'thunderbolt' markings inspired by the fighter's name.

This example was flown by Lt(jg) Yoshihiro Aoki, who led seven Raidens (all of the 352nd *Kokutai*'s then-serviceable J2Ms) to Kanoya in late April to help defend Kyushu.



J2M3 Raiden 21 '152' of Lt Susumu Itoh, 302nd *Kokutai*, Atsugi, Japan, April 1945

A veteran floatplane pilot, Lt Susumu Itoh switched to fighters in 1944 and eventually flew

Raidens with the 302nd *Kokutai*. He led 17 aircraft from the unit to Kanoya to serve with the combined 'Tornado' *kokutai*, Itoh subsequently participating in all the bomber interception missions flown by the 302nd from the airfield. He claimed two B-29s destroyed and three damaged, these successes represented by victory symbols on the tail of his Raiden. The fighter also has a flight leader's stripe on its rear fuselage.

MORANE-SAULNIER MS.406

SPECIFICATIONS (MS.406C-1)

Crew: Pilot

Length: 26ft 9.25in (8.16m)

Wingspan: 34ft 9.75in (10.61m)

Height: 9ft 3.75in (2.84m)

Empty: 4,189lb (1,900kg)

Max T/O: 6,000lb (2,722kg)

Max Speed: 302mph (486km/h)

Range: 466 miles (750km)

Powerplant: Hispano-Suiza 12Y-31

Output: 860hp (641kW)

Armament: One 20mm cannon firing through propeller hub and two 7.5mm machine guns in wings

First Flight Date: 8 August 1935 (MS.405)

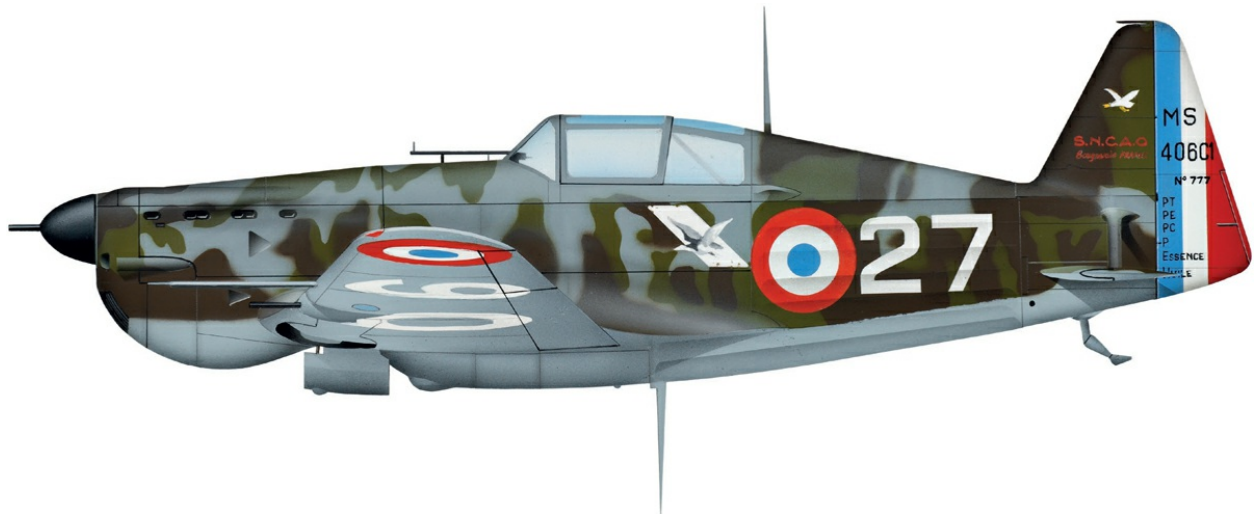
The *Armée de l'Air*'s staple fighter at the outbreak of World War II, the MS.406 was effectively outclassed by opposing German fighters in respect to both its performance and armament. These deficiencies resulted in more than 400 being lost during the Battle of France, with MS.406 pilots in turn claiming 175 victories. Developed from the MS.405, which had been built by Morane-Saulnier in response to a requirement issued by the *Armée de l'Air* for a modern *monoplane de chasse*, 1,000 MS.406s were ordered in March 1938, when the French government grew alarmed at the Nazi annexations of Czechoslovakia and Austria. Of mixed construction (conventional steel tube framing and fabric for the fuselage, but with the rest of the structure covered in Plymax – plywood skinning bonded to metal alloy), the first production aircraft reached the frontline in late 1938.

A number of MS.406s were also sold to European air forces in the final 18 months of peace, with Finland and Turkey both buying substantial quantities, and Poland being on the cusp of receiving the first of no fewer

than 160 fighters when it was invaded by Germany. Following the surrender of France in June 1940, surviving MS.406s were operated not only by the Vichy French, but also by the Luftwaffe as well, while other surplus examples were sent to Croatia, Finland and Italy.

The Swiss Air Force also flew a license-built version of the MS.406, designated the D-3800. Retaining the wing of the MS.405, but powered by the MS.406's Hispano-Suiza 12Y-31, the first of 84 EKW-built D-3800s were completed in November 1939. Retained as fighters throughout World War II, the D-3800s were relegated to use as trainers post-war and finally retired in 1954.

FIGHTER DETAILS



MS.406C-1 No 777 (L-806) of Sgt Kléber Doublet, 2nd Escadrille of *Groupe de Combat* III/1, Norrent-Fontes, France, early June 1940

Kléber Doublet was one of the few true MS.406 aces, although three of his six victories were shared with other pilots. Left behind at Connantre because of a mechanical failure with this aircraft when GC III/1 was sent to a less exposed airfield on 10 June, Doublet had his legs crushed during an air raid by Do 17s on Norrent-Fontes the following day. He succumbed to his wounds on 12 June.



MS.406C-1 MS328/'Black 8' of Sgt Martti Vihinen, 1/LeLv 28, Solomanni, Finland, March 1943

Four different pilots used this aircraft to score five victories, which were duly marked on its fin. In 1940–41, while still in French camouflage but wearing these markings, MS328 had been the assigned aircraft of flight leader 1Lt Tuomo Hyrkki. A five-victory ace, one of his claims to fame was that he scored the first Morane victory in the Winter War.

NAKAJIMA Ki-27

SPECIFICATIONS (Ki-27 Otsu)

Crew: Pilot

Length: 24ft 8.5in (7.53m)

Wingspan: 37ft 1.25in (11.31m)

Height: 10ft 8in (3.25m)

Empty: 2,447lb (1,110kg)

Max T/O: 3,946lb (1,790kg)

Max Speed: 292mph (470km/h)

Range: 1,060 miles (1,700km) with external tanks

Powerplant: Nakajima Ha-1b

Output: 780hp (582kW)

Armament: Two 12.7mm machine guns in nose and two 20mm cannon in wings

First Flight Date: 16 October 1936

Winner of a 1935 competition held by the Koku Hombu (Air Headquarters of the IJAAF to find a monoplane fighter, the Nakajima PE defeated rival designs from Mitsubishi and Kawasaki due to its outstanding manoevrability. The very similar Ki-27 evolved from the PE within months of the latter's first flight, and following the construction of ten preproduction airframes boasting longer span wings, the first definitive K-27s rolled out of the factory in early 1938. Little changed throughout the fighter's service life, with the first service examples being issued to units involved in the Sino-Japanese War in March 1938. These aircraft soon secured total control of the skies for the Japanese forces.

In May 1939, the Ki-27 also proved more than a match for superior numbers of Soviet I-15 and I-16 fighters encountered during the Nomonhan Incident along the Manchukuo/Outer Mongolian border. IJAAF pilots claimed no fewer than 1,340 aircraft destroyed during the four-month-long campaign, although post-war research has pruned the Red Air Force's losses to around 200. Upon the outbreak of the Pacific

War, the Ki-27 (given the Allied reporting name 'Nate') equipped all but two frontline IJAAF *sentai*, and the type supported the invasions of the Philippines, Burma, the Netherlands East Indies and Malaya. Although soon widely replaced by the Ki-43, the Ki-27 continued to serve with frontline units in China and at home. Eventually relegated to fighter training duties, a considerable number of Ki-27s (of which 3,399 were built between 1937 and 1942) survived to become platforms for kamikaze attacks in the last months of the war.

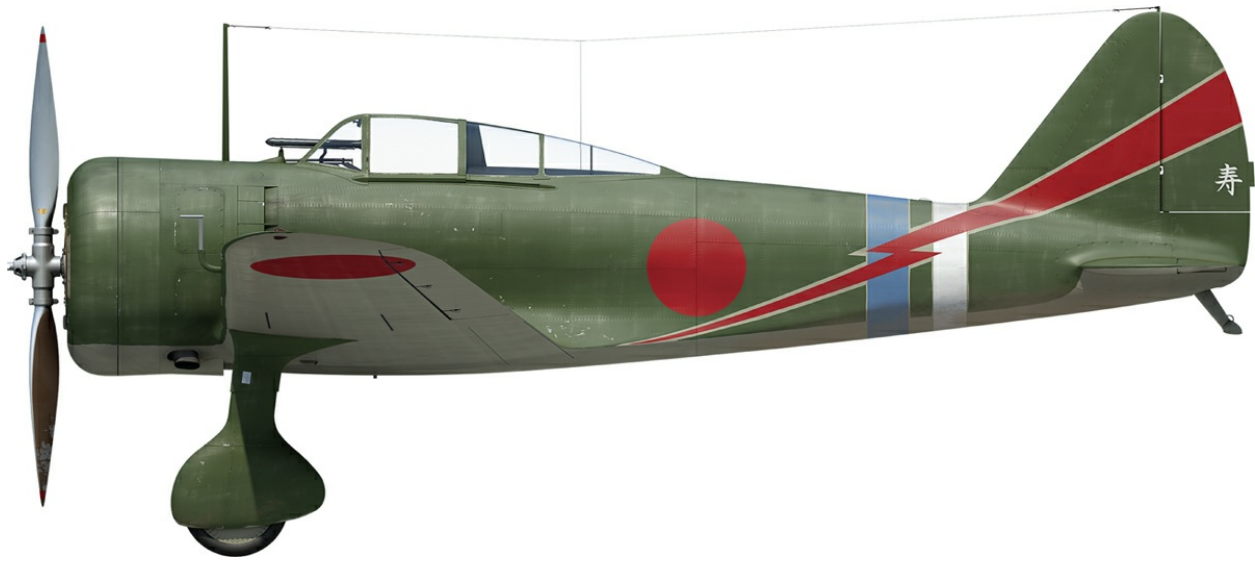
The Mansyu Ki-79 trainer was based on the Ki-27, the aircraft being fitted with a 510hp (380kW) Hitachi Ha-13 radial. A total of 1,329 aircraft were built in four variants, with both the Ki-79b and Ki-79d being two-seaters. Like the surplus Ki-27s, many Ki-79s were expended in kamikaze missions in 1944–45.

FIGHTER DETAILS



Ki-27 Otsu of Capt Hyoe Yonaga, 2nd *Chutai*, 24th *Sentai*, the Philippines, December 1941

This camouflaged Ki-27 of the 2nd *Chutai* leader displays an unusual presentation of the unit insignia, with five instead of the more usual four stripes on the rudder. It also has red and white diagonal stripes on the tailplanes. Capt Yonaga was a Nomonhan Incident ace with 16 victories, and although he led the 2nd *Chutai* during the Philippines campaign and in south China in the summer of 1942, he made no further claims.



Ki-27 Otsu of Capt Masao Morikawa, 1st *Chutai*, 50th *Sentai*, Mingaladon, Burma, March 1942

This aircraft was camouflaged with olive green paint following several Allied air attacks on Japanese airfields. The 50th *Sentai* followed the practice of 'naming' each aircraft with a *kanji* character painted on the rudder, in this case 'longevity'. At this time the roundel was not usually displayed on the fuselage by the IJAAF, and it is believed that the 50th *Sentai* applied it as an integral part of the unit's lightning bolt insignia.

NAKAJIMA Ki-43 HAYABUSA

SPECIFICATIONS (Ki-43-IIB)

Crew: Pilot

Length: 29ft 3.25in (8.92m)

Wingspan: 35ft 6.75in (10.84m)

Height: 10ft 8.75in (3.27m)

Empty: 4,211lb (1,910kg)

Max T/O: 6,450lb (2,926kg)

Max Speed: 329mph (529km/h)

Range: 1,095 miles (1,762km)

Powerplant: Nakajima Ha-115

Output: 1,150hp (857kW)

Armament: Two 12.7mm machine guns in nose; maximum bomb load of 1,102lb (500kg) on underwing racks

First Flight Date: January 1939

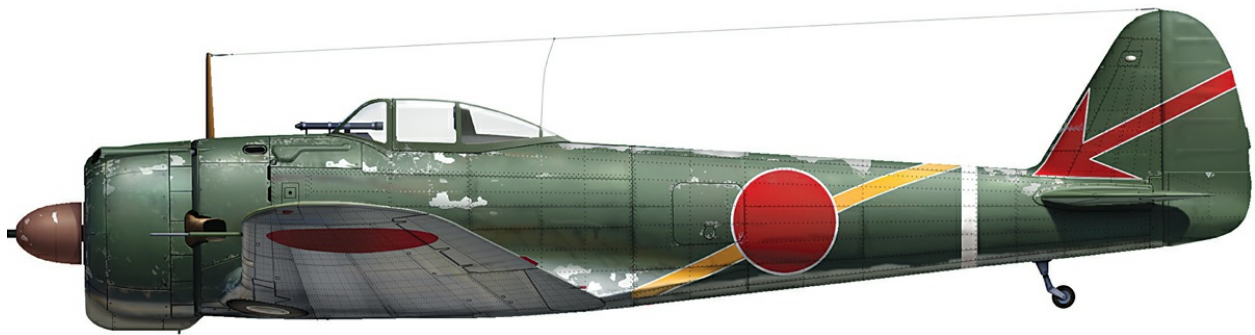
The staple IJAAF fighter of World War II, the Ki-43 was produced in greater numbers than any of its land-based contemporaries. Developed as a direct replacement for Nakajima's Ki-27, the Hayabusa (Peregrine) embraced the same design philosophy as its predecessor in that it was built to be supremely manoeuvrable at the expense of effective armament, protection for the pilot and structural strength. Following the delivery of ten service trials aircraft in 1939–40 (which were criticized by IJAAF test pilots for not being as agile as the Ki-27), production Ki-43-Is began to arrive in the frontline in the spring of 1941. Three sub-variants of the two-bladed -I were produced between April 1941 and February 1943, all of which featured different armament.

The Hayabusa made its combat debut with the 59th and 64th *Sentai* during the Japanese invasion of Southeast Asia in December 1941. Flying alongside the more numerous Ki-27, it swiftly cleared the skies of Allied opposition. Many pilots achieved ace status in the Ki-43 during this early

period of the conflict in Asia. Light weight and a large wing area gave the fighter (given the Allied reporting name 'Oscar') a smaller turning radius and higher rate of climb than its opponents. On the other hand, it lacked firepower, armour and fuel tank protection, and its structure, while not fragile, could not absorb much punishment. Furthermore, it could not outrun its heavier opponents in a dive. Pilots also complained that the Ki-43-I was underpowered.

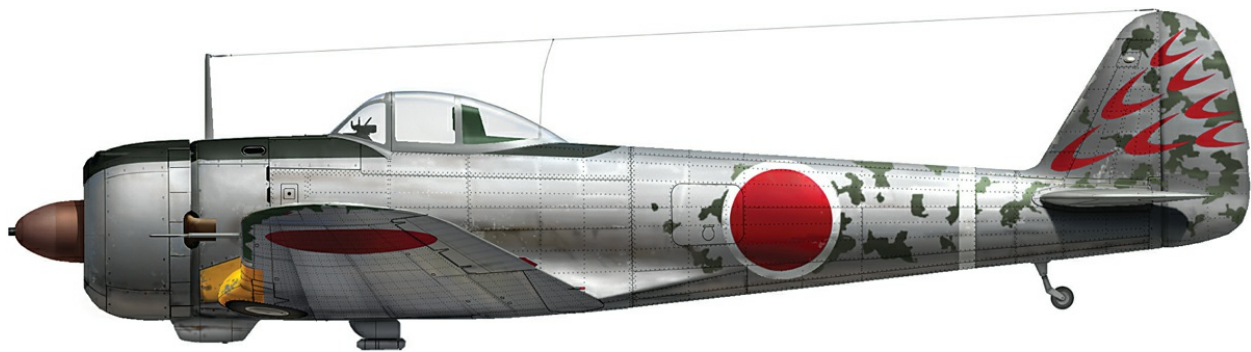
Nakajima responded with production of the re-engined Ki-43-II of late 1943. Aside from the fitment of the supercharged Nakajima Ha-115 radial engine, the new fighter also used a three-bladed constant speed propeller, had reduced-span 'clipped' wings, strengthened underwing hardpoints, limited pilot armour and a revised windscreen and canopy. Although the Ki-43-II/III was outclassed by vastly improved Allied fighters like the P-47 and P-38 by the time it reached units in the frontline, the aircraft remained in production to war's end, by which time 5,919 examples had been built. Hundreds of Ki-43s were destroyed in kamikaze attacks from October 1944, the bomb-armed 'Oscars' proving effective in this role.

FIGHTER DETAILS



Ki-43-I of Lt Saburo Nakamura, 2nd *Chutai*, 64th *Sentai*, Mingaladon, Burma, November– December 1942

The yellow slanting band with thin white outline displayed by this aircraft is an exceptional marking indicating a *chutai* leader. Future 20-victory ace Lt Nakamura downed two RAF Mohawk IVs with this aircraft on 10 November 1942, and he was appointed 2nd *Chutai* deputy leader later that same day following the death of Capt Haruyasu Maruo. Nakamura survived in the frontline until 6 October 1944, when both he and his Ki-43-III were hit by fire from USAAF B-25s attacking the 64th *Sentai*'s airfield at Meiktila.



Ki-43-II of the 2nd *Chutai*, 248th *Sentai*, Hollandia, New Guinea, March 1944

This aircraft displays the *sentai* insignia derived from the leaf of the Ashi (reed), which in turn recognizes the name of the unit's home airfield of Ashiya. Noteworthy is the way the points of the leaves indicate the numbers two, four and eight. The colours are white for the 1st, red for the 2nd and yellow for the 3rd *Chutai*. This aircraft was one of 30 Ki-43-IIs lost by the 248th *Sentai* to Allied strafing attacks during its time in New Guinea.

NAKAJIMA Ki-44 SHOKI

SPECIFICATIONS (Ki-44-II)

Crew: Pilot

Length: 20ft 10in (8.79m)

Wingspan: 31ft 0in (9.45m)

Height: 10ft 8in (3.25m)

Empty: 4,643lb (2,106kg)

Max T/O: 6,598lb (2,993kg)

Max Speed: 376mph (605km/h)

Range: 1,058 miles (1,700km) with external tanks

Powerplant: Nakajima Ha-109

Output: 1,520hp (1,133kW)

Armament: Two 7.7mm machine guns in nose and two 12.7mm machine guns in wings

First Flight Date: August 1940

Comparable to the Mitsubishi J2M in its design concept, the Ki-44 sacrificed manoeuvrability and lightness of flight controls for sheer straight-line speed and rate of climb. As a result of these characteristics, the aircraft was initially unpopular with pilots, but once the Imperial Japanese Army Air Force became involved in intercepting USAAF heavy bomber formations at medium to high altitudes in 1943–44, the Shoki (Devil-Queller or Demon) came into its own. Nevertheless, its high landing speed and difficult handling characteristics remained a problem throughout the aircraft's career, and many were written off in operational accidents. Indeed, spins, stalls and snap rolls were all banned in the Ki-44.

Production Shokis (given the Allied reporting name 'Tojo') started to reach the frontline in early 1942, the type making its combat debut over the jungles of the China–Burma–India (CBI) theatre. Later that same year the -I was replaced by the -II, which featured a more powerful Ha-109 engine, improved armament and pilot and fuel tank protection. Aside

from its service over the CBI, the Ki-44 also fought the Allies over Malaya, in defence of the oilfields at Palembang, on Sumatra, in the Philippines and over the home islands. Production of the Ki-44 ended in December 1944 (after the completion of 1,227 aircraft) so as to allow Nakajima to concentrate its manufacturing efforts on the vastly superior Ki-84 Hayate.

FIGHTER DETAILS



Ki-44-II Ko of Capt Yuki Yoshi Wakamatsu, 2nd *Chutai* Leader, 85th *Sentai*, Tien Ho airfield, Canton, China, summer 1943

This aircraft, flown by Capt Wakamatsu, displays an unusual variation of the 85th *Sentai* insignia and is unpainted, apart from the 2nd *Chutai* leader's fuselage band and brown spinner. The metal surface has oxidized in the south China climate of strong sun and high humidity, giving it an almost dull grey appearance. Capt Wakamatsu led two flights of free-ranging Ki-44s over central and southwest China during 1943–44.



Ki-44-II Hei of Maj Yoshio Hirose, 1st *Hikotai* of the Hitachi Kyodo Hikoshidan, Mito, Japan, December 1944

Typical of the aircraft that equipped the Secondary Provisional Units (formed within the Training Air Divisions to augment interception capability against the B-29 threat), this Ki-44 was flown by Maj Yoshio Hirose of the Hitachi Kyodo Hikoshidan (Training Air Division). The red lightning bolt was Maj Hirose's personal marking. Hirose had a distinguished career in the IJAAF, claiming

victories from 1937 onwards and serving with distinction in the 64th *Sentai* over Burma. He was killed on 22 December 1944 when he rammed a B-29.

NAKAJIMA Ki-84 HAYATE

SPECIFICATIONS (Ki-84-I Ko)

Crew: Pilot

Length: 32ft 6.5in (9.92m)

Wingspan: 36ft 10.5in (11.24m)

Height: 11ft 1in (3.38m)

Empty: 5,864lb (2,660kg)

Max T/O: 8,576lb (3,890kg)

Max Speed: 392mph (631km/h)

Range: 1,025 miles (1,650km)

Powerplant: Nakajima Ha-45-23 Homare

Output: 2,041hp (1,522kW)

Armament: Two 12.7mm machine guns in nose and two 20mm cannon in wings

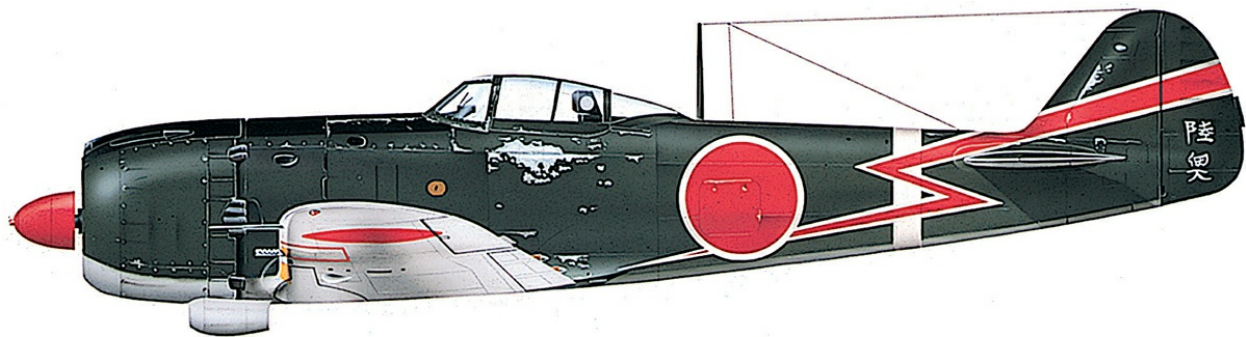
First Flight Date: March 1943

One of the best IJAAF fighters of the war, the Ki-84 Hayate (Gale) was built as a direct replacement for the venerable Ki-43. Combining a powerful Nakajima Ha-45 radial engine with a well-built and properly armoured airframe, the 'Frank' (Allied reporting name) suffered a prolonged gestation like most Japanese fighter designs due to engine unreliability and use of inferior-quality materials. The primary powerplant maladies centred on the Ha-35's direct injection system, which proved to be labour intensive in respect to servicing between flights even once the fighter had reached the frontline. This in turn resulted in a high unserviceability rate among Ki-84-equipped *sentai* in the last year of the war, plus numerous operational accidents due to aircraft suffering engine failure in flight. No fewer than 125 service trials and pre-production aircraft were deemed necessary by the IJAAF in order to sort the engine problems out, and this in turn delayed the fighter's operational debut until mid-1944.

Ki-84s firstly engaged Allied forces over China, before being rushed to

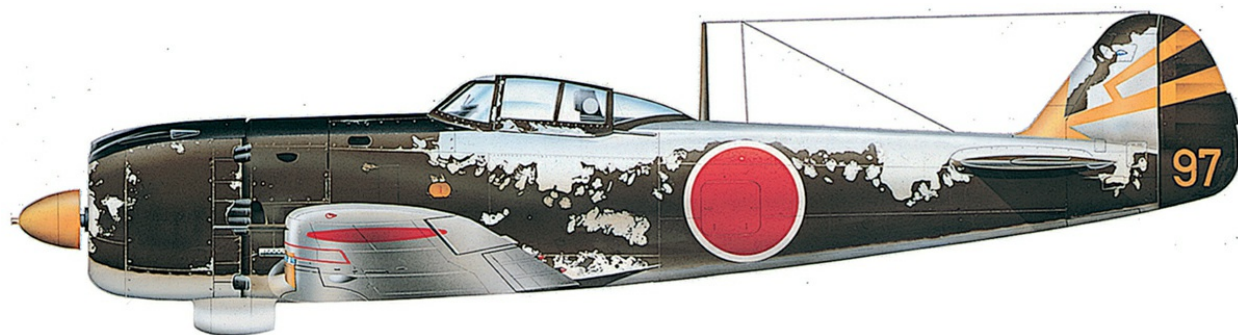
the Philippines following the American invasion in October 1944. When its engine was running as designed, the Ki-84 was a fearsome opponent for any Allied fighter, allowing the aircraft to more than hold its own in the final aerial engagements of the war. Several sub-variants were produced during the Ki-84's brief production life, and these primarily differed in their weapons fits, although the -IIs utilized a wooden rear fuselage and wingtips in an effort to ease the strain on Japan's rapidly diminishing supply of aluminium. A significant number of the 3,514 Hayates built were used in kamikaze attacks.

FIGHTER DETAILS



Ki-84-I Ko of WO Yojiro Ofusa, 1st *Chutai*, 103rd *Sentai*, Itami, Japan, January 1945

The white kanji character on the tail of this aircraft reads 'Mutsu' after Ofusa's native prefecture in Japan. These names were added both for moral purposes and as a good luck symbol, the aircraft being christened jointly by the pilot and his crew chief. Most of the aircraft in the 1st *Chutai* were named after birds. Decorated for his aerial successes, Ofusa included five Mustangs and two Thunderbolts among his tally of 19 victories.



Ki-84-I Ko of 1Lt Shigeyasu Miyamoto, 3rd *Chutai*, 103rd *Sentai*, Itami, Japan, January 1945

Miyamoto's first combat in the Ki-84 came in January 1945 when he intercepted B-29s over Japan in this aircraft. On 15 April he led eight fighters on a bombing raid against the north airfield on Okinawa, and on the return leg of the mission he was intercepted by patrolling US Navy F6F-5 Hellcats. Miyamoto was wounded in the engagement and subsequently force-landed his 'Frank' on Tokuno Island, northeast of Okinawa. Decorated for his actions during the Okinawan campaign, Miyamoto survived the war.

NAKAJIMA J1N1 GEKKO

SPECIFICATIONS (J1N1-S)

Crew: Pilot and gunner

Length: 39ft 11.5in (12.18m)

Wingspan: 55ft 8.5in (16.98m)

Height: 14ft 11.5in (4.56m)

Empty: 10,670lb (4,840kg)

Max T/O: 18,043lb (8,184kg)

Max Speed: 315mph (507km/h)

Range: 2,330 miles (3,750km)

Powerplant: two Nakajima NK1F Sakae engines

Output: 2,260hp (1,684kW)

Armament: Two upward- and two downward-firing 20mm cannon in fuselage

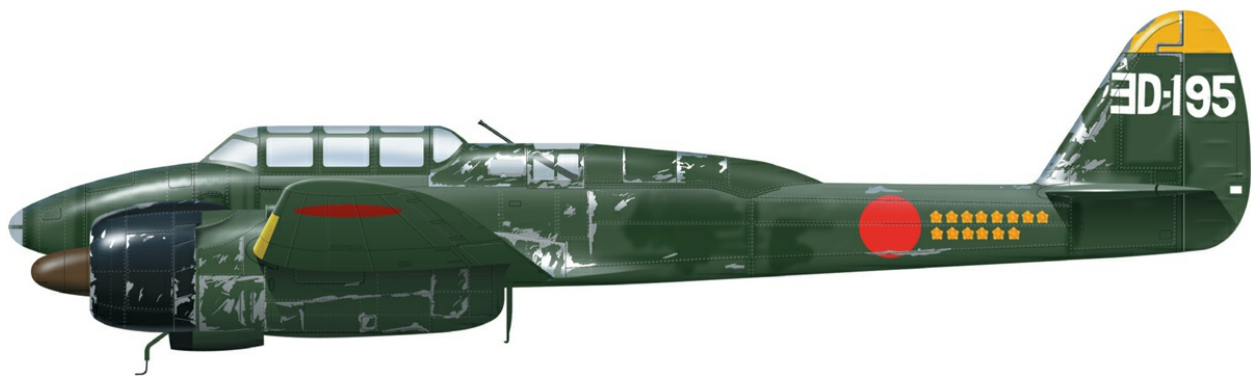
First Flight Date: May 1941

Although the J1N had originally been developed in 1938 as a shore-based long-range fighter for the IJNAF, the concept of a twin-engined dayfighter had proven itself to be fatally flawed by the time the aircraft entered service in August 1942. It was duly stripped of its weaponry and converted into a long-range reconnaissance platform instead. Designated the J1N1C, which was changed to J1N1-R soon afterwards, the first 'Irving's' (the type's Allied reporting name) were encountered over the Solomons.

With the advent of night bombing raids on Japanese targets by USAAF heavy bombers, a number of J1N1-C/Rs were converted in the field into nightfighters through the installation of obliquely firing 20mm cannon. Designated the J1N1-C Kai, the makeshift interceptor proved successful enough for Nakajima to go into production with the dedicated J1N1-S Model 11 Gekko (Moonlight) nightfighter. The first of these entered service in August 1943, the aircraft featuring a redesigned upper rear fuselage and obliquely firing 20mm cannon. Once in service, a number of

Gekkos were also fitted with radar and nose-mounted searchlights and 20mm cannon. Production of the nightfighter ended in December 1944 (by which point 479 J1N1s had been built), with the J1N1-S having proven to be a worthy opponent to the B-24 in the Central and Southwest Pacific. However, the Gekko struggled to intercept B-29s targeting the home islands at night in 1945, the aircraft lacking both radar and high-altitude performance. Nevertheless, some Superfortresses were claimed by more skilled Gekko crews, although a significant number of J1N1-Ss were lost in return.

FIGHTER DETAILS



J1N1-S Model 21 of Lt Sachio Endo and CPO Osamu Nishio, 2nd *Sentai*, 302nd *Kokutai*, Atsugi, Japan, January 1945

The victory markings on this Gekko nightfighter consist of five double cherry blossoms (aircraft destroyed) and nine single blossoms (probables), these successes having been achieved by Endo and Nishio. At the time of their deaths in combat on 14 January 1945, the pair had been credited with at least eight B-29s destroyed.



**J1N1-S Model 23 of CPO Juzo Kuramoto and Ens Shiro Kurotori, 2nd *Sentai*, *Yokosuka Kokutai*, Yokosuka,
Japan, May 1945**

Adorned with eight victory symbols (six probables and two destroyed) on its fuselage, this radar-equipped aircraft was the regular mount of CPO Kuramoto and Ens Kurotori. The pair used the Gekko to claim five B-29s destroyed and one damaged on the night of 25–26 May 1945.

NAKAJIMA A6M2-N

SPECIFICATIONS (A6M2-N)

Crew: Pilot

Length: 33ft 1.5in (10.10m)

Wingspan: 39ft 4.25in (12.00m)

Height: 14ft 1.25in (4.30m)

Empty: 4,215lb (1,912kg)

Max T/O: 6,349lb (2,880kg)

Max Speed: 270mph (435km/h)

Range: 1,108 miles (1,784km) with float tank

Powerplant: Nakajima NK1C Sakae 12

Output: 950hp (708kW)

Armament: Two 7.7mm machine guns in nose, two 20mm cannon in wings; provision for two 132lb (60kg) bombs under wings

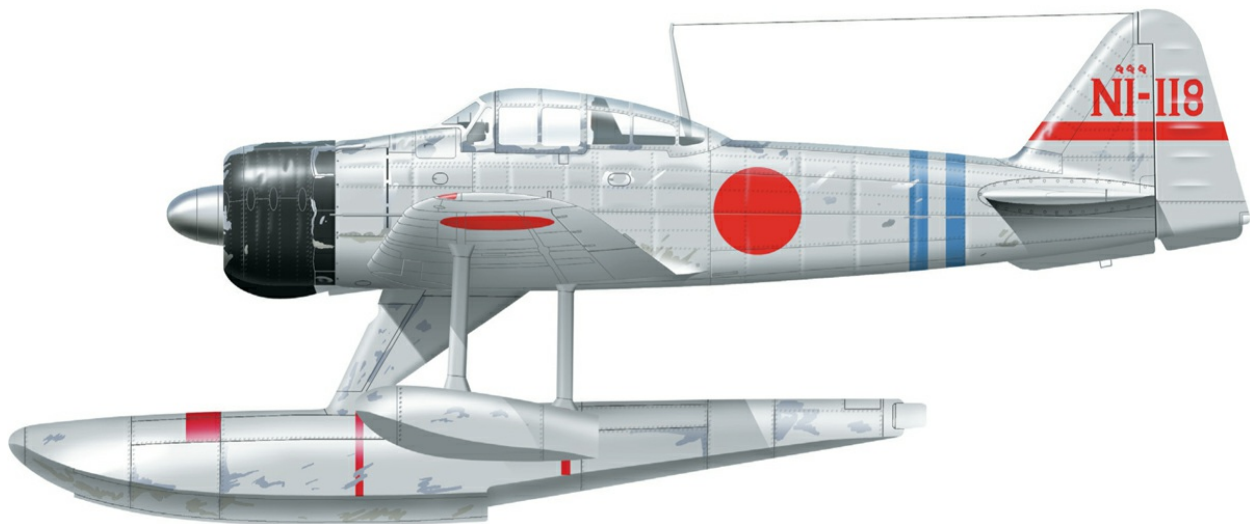
First Flight Date: 8 December 1941

Built in answer to an IJNAF requirement issued in September 1940 for a floatplane fighter capable of providing aerial support for an amphibious landing force, the A6M2-N was based closely on the Mitsubishi fighter of the same period. Designed for operation from the isolated lagoons and sheltered waterways that proliferated throughout the Southwest and Central Pacific, the task of developing the Zero-sen floatplane was given to Nakajima, as Mitsubishi was focused on producing sufficient carrier-based A6Ms to satisfy the IJNAF's burgeoning needs. The original order for the floatplane fighter was issued to Kawanishi and its advanced N1K1 Kyofu, but due to the immaturity of the latter programme, the IJNAF chose an interim A6M-based fighter to fulfil their immediate requirements.

The work carried out by Nakajima to turn the A6M2 into the A6M2-N focused on the replacement of the undercarriage with a large central float and two outriggers, the addition of a small ventral fin to allow the

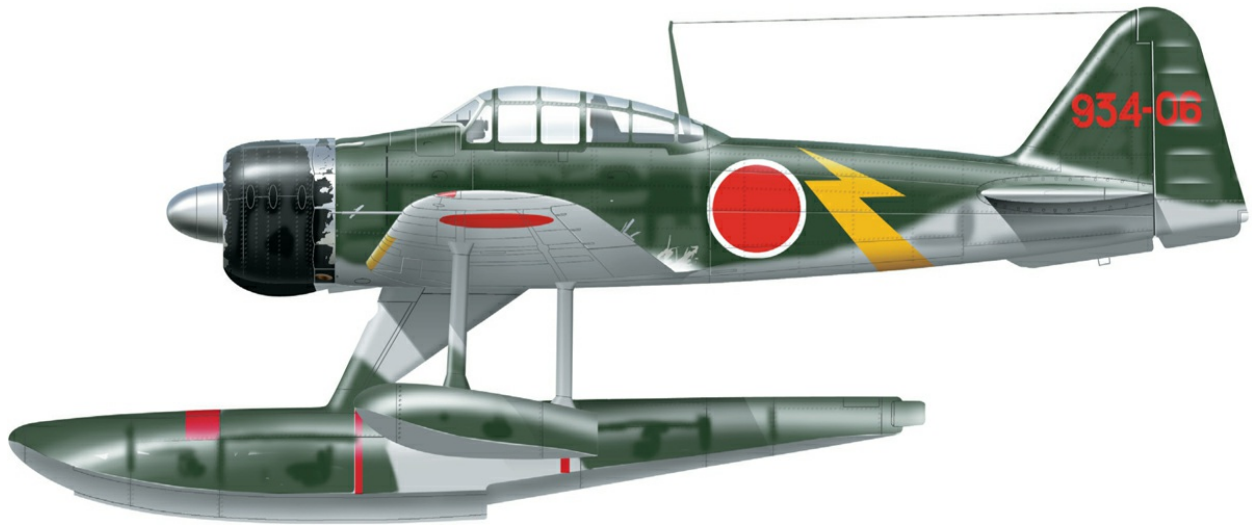
pilot to maintain directional stability and the incorporation of an extra fuel tank within the float instead of beneath the now-occupied centre fuselage. The first production aircraft entered IJNAF service in July 1942, and production of 327 examples (given the Allied reporting name 'Rufe') was completed by September of the following year. Despite the central float restricting the A6M2-N's top speed to just 270mph, the floatplane fighter retained much of the conventional Zero-sen's manoeuvrability, and it acquitted itself reasonably well over the Solomons and in the Aleutians.

FIGHTER DETAILS



A6M2-N of Lt(jg) Keizo Yamazaki, 802nd *Kokutai*, Shortland Island Seaplane Base, Solomon Islands, February 1943

On 13 February 1943, Yamazaki claimed a P-39 probably destroyed while flying this fighter. Several other pilots from the unit also enjoyed success with the aircraft, hence the three red hatchet markings on the fin. The 802nd *Kokutai* participated in the campaign in the Solomons until mid-March 1943, when it was transferred to the Marshall Islands. The unit was disbanded there seven months later.



A6M2-N of CPO Eitoku Matsunaga, 934th *Kokutai*, Banda Sea/ Ambon Island, September 1943

Reputedly the leading floatplane ace of the Pacific War, CPO Eitoku Matsunaga flew this distinctively marked A6M2-N while assigned to the 934th *Kokutai* operating from Ambon Island, the 934th escorted IJNAF floatplane reconnaissance types on long-ranging missions to the northern Australian coast.

NORTH AMERICAN P-51A/MUSTANG I

SPECIFICATIONS (P-51A)

Crew: Pilot

Length: 32ft 3in (9.83m)

Wingspan: 37ft 0in (11.28m)

Height: 12ft 2in (3.71m)

Empty: 6,550lb (2,971kg)

Max T/O: 8,800lb (3,992kg)

Max Speed: 387mph (622km/h)

Range: 1,250 miles (2,010km) with external tanks

Powerplant: Allison V-1710-81

Output: 1,200hp (1,014kW)

Armament: Four 0.50in machine guns in wings

First Flight Date: 26 October 1940

The Mustang has its origins in a British Purchasing Commission deal struck with North American in April 1940 for an advanced fighter to supplant the Spitfire. With the RAF facing an impending Luftwaffe onslaught, the agreement stipulated that the company had to have a completed prototype – tailored to the British specifications – ready for flight within 120 days of the original submission. Fortunately, North American had already made a start independently of the British deal, its NA-73X design incorporating some of the lessons gleaned from aerial combat in Europe. Three days short of the required date the airframe was completed, and testing soon bore out the ‘rightness’ of the design, the aircraft (christened the Mustang I by the British, who bought 760) handling beautifully thanks to its revolutionary semi-laminar flow airfoil wing.

However, it was soon discovered that the fighter’s Allison V-1710 ‘ran out of steam’ above 17,000ft due to its lack of a multi-stage supercharger. By that stage in the war, fighter combat was taking place at ceilings well

in excess of 20,000ft, where the 'thin' air starved a conventionally aspirated engine, so the RAF Mustang Is were fitted with cameras and relegated to the low-level tactical reconnaissance and army co-operation roles. The USAAF, too, realizing that the P-51A was no good as a fighter above medium altitude, ordered a small number of aircraft (fewer than 900) for ground-attack tasks instead. These included the A-36, which was a dedicated dive-bomber variant fitted with slatted dive brakes above and below the wings. Capable of carrying up to 1,000lb of bombs on two underwing hardpoints, the 500 A-36s delivered to the USAAF in 1942-43 fought in the CBI and Mediterranean Theater of Operations (MTO). No fewer than 177 A-36s were lost to enemy action (mainly flak) in the MTO, although dive-bomber pilots claimed 84 aerial victories in return.

FIGHTER DETAILS



Mustang I AG346, Aeroplane and Armament Experimental Establishment, Boscombe Down, Wiltshire, November 1941

AG346 was the second Mustang I completed, and after flight-testing at Mines Field, California, it was crated up and shipped via the Panama Canal sea route across the Atlantic to Britain. Once reassembled by No 1 Aircraft Assembly Unit at Speke, Liverpool, in October 1941, it was flown to the Aircraft & Armament Experimental Establishment at Boscombe Down to commence service trials. Eventually serving with five RAF squadrons, the aircraft was downed by flak near Gace, France, on 20 August 1944 while assigned to No 168 Sqn.



P-51A-10 Mustang '43-6303' of Capt John S Stewart, 76th FS/23rd FG, Suichwan, China, February–March 1944

This P-51A-10 was in the initial batch of Mustangs assigned to the 23rd FG in China in the autumn of 1943. The aircraft, transferred from the 311th FG in India, were concentrated in the 76th FS and saw their first action during the Thanksgiving Day 1943 raid on Formosa. It displays the final score of Capt John Stewart, the leading ace and CO of the 76th FS who was credited with shooting down nine Japanese aircraft between 23 July 1943 and 12 February 1944. It carried the name of Stewart's wife, as did his earlier P-40s.

NORTH AMERICAN P-51B/C/D/K MUSTANG

SPECIFICATIONS (P-51D)

Crew: Pilot

Length: 32ft 3in (9.83m)

Wingspan: 37ft 0in (11.28m)

Height: 12ft 2in (3.71m)

Empty: 7,635lb (3,463kg)

Max T/O: 12,100lb (5,488kg)

Max Speed: 437mph (703km/h)

Range: 1,650 miles (2,655km) with external tanks

Powerplant: Packard V-1650-7

Output: 1,720hp (1,283kW)

Armament: Six 0.50in machine guns in wings; up to 2,000lb (907kg) of bombs or six 5in (12.7cm) rocket projectiles under wings

First Flight Date: 13 October 1942

As detailed in the previous entry, the Mustang I's performance had prevented it from participating in the high-altitude dogfights that characterized air combat in Europe. However, the airframe itself was more than sound, so the RAF quickly searched for a replacement powerplant and came up with the Merlin 61. Once paired with this battle-proven engine (as used operationally in the Spitfire IX from the autumn of 1943), the aircraft's performance was startling – a communiqué of the findings was immediately sent to North American, and the rest is history. Car builder Packard was granted a licence to build the Merlin as the Packard V-1650, and North American followed the British lead in fitting surplus P-51A airframes with the 'new' powerplant.

The Merlin-powered P-51B made its combat debut – with the 354th Fighter Group – over Europe in December 1943, just when the USAAF's

much-vaunted daylight bomber campaign had begun to falter due to unsustainable losses. Here was the embattled Eighth Air Force's 'knight in shining armour', capable of escorting B-17s and B-24s throughout their hazardous missions. Over the next 19 months of war in Europe, the Mustang steadily became the dominant USAAF fighter, with the 'bubbletop' P-51D/K being the definitive variant in the frontline from June 1944 – 6,600 D-models were built at North America's Inglewood, California plant and 1,600 K-models completed at the company's Dallas, Texas, facility.

The RAF, too, got its hands on more than 1,000 Merlin-powered Mustang IIIs (P-51B/C) and IVs (P-51D/K) through Lend-Lease arrangements from late 1943. In total more than 14,800 P-51s were built by North American, plus a further 200 under-license in Australia. The fighter continued to serve in a frontline capacity with the USAF into the early 1950s, fighting in the Korean War, and further afield with Central and South American air forces until the early 1970s.

FIGHTER DETAILS



P-51D Mustang 44-13561/AJ-T of Maj Richard E Turner, 356th FS/354th FG, Lashenden, Kent, 18 June 1944

Returning from a dive-bombing mission on 18 June, Maj 'Dick' Turner, CO of the 356th FS, was patrolling off Hastings in 44-13561 looking for V1s when he spotted one and chased it for ten minutes. Failing to close on the missile, he opened fire in desperation and scored a lucky hit, causing it to crash. Turner soon intercepted another missile. Exhausting his ammunition, he resorted to knocking it over with his wingtip. These missiles were the last successes Turner claimed in this particular aircraft.



Mustang III HB861/UZ-B of Flt Lt Jozef Jeka, No 306 (Polish) Sqn, Andrews Field, Essex, 6 March 1945

Eight-victory Polish ace Flt Lt Jozef Jeka claimed one of the last V1s to fall to the RAF in this Mustang III when, on 6 March 1945 during a bomber escort mission, he encountered a missile over the Continent and shot it down to claim his only 'Diver' kill. His aircraft was adorned with a stylish piece of nose art that would have been more at home on a USAAF Mustang rather than a RAF one!

NORTHROP P-61 BLACK WIDOW

SPECIFICATIONS (P-61B)

Crew: Pilot, radar operator and gunner

Length: 49ft 7in (15.11m)

Wingspan: 66ft 0in (20.11m)

Height: 14ft 8in (4.47m)

Empty: 22,000lb (9,979kg)

Max T/O: 38,000lb (17,237kg)

Max Speed: 366mph (589km/h)

Range: 3,000 miles (4,828km) with external tanks

Powerplants: two Pratt & Whitney R-2800-65 Double Wasp engines

Output: 4,000hp (2,982kW)

Armament: Four ventral 0.50in machine guns and four 20mm cannon in remote-controlled dorsal turret; provision for 6,400lb (2,903kg) of underwing ordnance

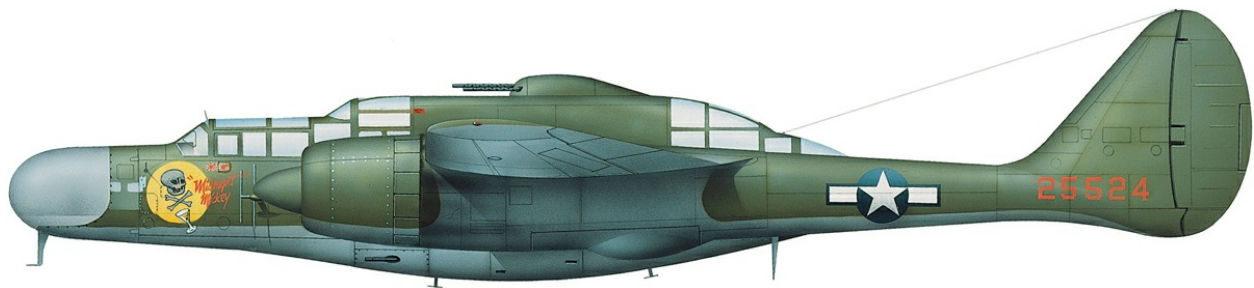
First Flight Date: 26 May 1942

The first aircraft designed specifically as a radar-equipped nightfighter, the Northrop P-61 Black Widow was heavily influenced by early RAF combat experience with radarequipped aircraft in 1940/41. Built to fulfil a late 1940 US Army Air Corps requirement, the proposed fighter was designed around the bulky Radiation Laboratory SCR-720 radar, which was mounted in the aircraft's nose. The company's design was accepted the following year, and Northrop immediately went to work building two XP-61 prototypes and 13 YP-61 evaluation aircraft.

The Black Widow would be the largest fighter ever procured for frontline service by the USAAF, its substantial airframe capable of housing a dorsal barbette of four 0.50in Browning machine guns and four ventrally mounted Hispano AN/M2 20mm cannon. After initial structural and radar problems, the aircraft was finally issued to an operational unit (the 481st Night Fighter Group) in March 1944, and both ETO and Pacific squadrons went into action almost simultaneously

that spring – the honour of scoring the P-61's first aerial victory (an IJNAF G4M 'Betty' bomber) went to the 6th Night Fighter Squadron on 6 July 1944. A total of 706 Black Widows were built in three distinct variants – A-, B- and C-models, which principally differed in their armament configuration – by Northrop, and the type undertook night intruder operations against ground targets as well as in its designated nightfighter role. The aircraft remained in the post-war USAAF/USAF inventory until May 1950, when the Far East Air Force retired its final Black Widows.

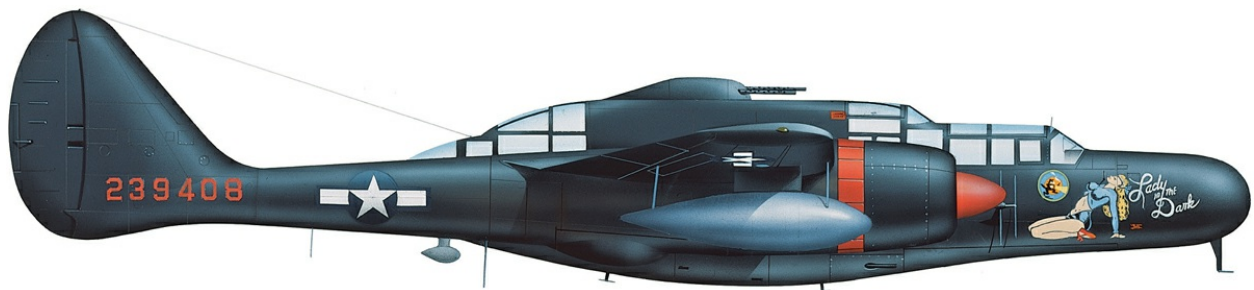
FIGHTER DETAILS



P-61A-1 Black Widow 42-5524 of 2Lt MW McCumber, 6th NFS, Saipan, late 1944

The 6th NFS was one of two Black Widow squadrons whose aircraft displayed elaborate nose art.

It was also among the first to receive the type, deliveries of which started on 1 May 1944. This Dash-1 model was among those P-61As equipped with a top turret before production of the latter was fully diverted to B-29s coming off Boeing's assembly line. 42-5524 was assigned to 2Lt Myrtle W McCumber and his crew, who were credited with two confirmed victories.



P-61B-2 Black Widow 42-39408 of Capt S Solomon, 548th NFS, Ie Shima, Okinawa, spring 1945

42-39408 achieved the distinction of scoring the final USAAF fighter victory of the Pacific War on 14/15 August 1945 while assigned to the 548th NFS on Ie Shima, the Ki-44 engaged by Lts Robert

Clyde and Bruce LeFord striking the water upon seeing the P-61. The aircraft was assigned to Capt Sol Solomon and his radar observer Lt John Scheerer at the time, the 548th's primary roles being nocturnal intruder missions over the Japanese home islands and night patrols off Okinawa.

POLIKARPOV I-16

SPECIFICATIONS (I-16 Type 10)

Crew: Pilot

Length: 19ft 11.15in (6.07m)

Wingspan: 29ft 6.33in (9.00m)

Height: 8ft 4.75in (2.56m)

Empty: 2,976lb (1,350kg)

Max T/O: 3,781lb (1,715kg)

Max Speed: 273mph (440km/h)

Range: 497 miles (800km)

Powerplant: Shvetsov M-25A

Output: 750hp (578kW)

Armament: Two 7.62mm machine guns in nose and two in wings; provision for two–six underwing 82mm rockets or up to 441lb (200kg) bombs under wings

First Flight Date: 31 December 1933

The world's first cantilever low-wing monoplane fighter to feature a retractable undercarriage, the I-16 was an incredibly advanced design for its time when it entered service in 1935. By the outbreak of World War II, however, it had been well and truly left behind by more modern fighter types. Despite this fact, the I-16 still equipped two-thirds of all Soviet Air Force fighter units at the time of the German invasion in June 1941. Indeed, as a sign of just how revered the I-16 was in the USSR, although production had been stopped in 1940, Polikarpov was ordered to re-open the line just 12 months later! The last I-16 fighter was completed in 1942, bringing the total number built to 6,648.

The I-16 was powered by a reverse-engineered Wright Cyclone (designated the Shvetsov M-22), the fighter being routinely upgraded throughout its long production life with more powerful iterations of the Shvetsov engines – ranging from the M-22 rated at 480hp to the M-63 with 900hp – and improved armament. The I-16 was given its combat

debut with the Republican forces in the Spanish Civil War, the USSR supplying 278 fighters. It was here that the aircraft's outstanding manoeuvrability was first used to telling effect. The I-16's ailerons were feather light, it boasted an exceptional roll rate and the fighter possessed excellent zoom-climb ability. Offsetting these positives was the fact that the I-16 was only a satisfactory gun platform due to its oversensitivity to control movements.

Nevertheless, the I-16 was the primary Soviet fighter during the Nomonhan Incident with Japan in 1939, where it suffered terribly at the hands of the more agile Ki-27 and A5M. Later that same year the I-16 bore the brunt of the fighting with Finland in the Winter War of 1939-40, before being thrown into the fray against the Luftwaffe in June 1941. Despite the staggering losses inflicted on I-16 units in all three conflicts, the aircraft still produced a large number of aces, with five or more aerial victories claimed while flying the Polikarpov fighter. The I-16 was finally retired from frontline service in 1943.

FIGHTER DETAILS



I-16 Type 24 of Snr Sgt S Surjenko, 72nd SAP, Northern Fleet Air Force, Vaenga, Soviet Union, summer 1941

This aircraft of the 72nd SAP was one of a number of I-16s from the unit to be hastily adorned with a patriotic slogan (in this case '*For the USSR!*') in the immediate wake of the German invasion of the Soviet Union. Its pilot was Snr Sgt S Surjenko, who was photographed in the cockpit of the fighter at Vaenga.



I-16 Type 17 of Snr Lt Mikhail Vasilyev, 4th GIAP, Baltic Fleet Air Force, Novaya Ladoga, Soviet Union, spring 1942

Mikhail Vasilyev flew a total of 440 combat sorties (many of them in this 20mm cannon-armed Type 17), during which he shot down four enemy aircraft and shared in the destruction of 20 more. He had reached the rank of captain, and was also a HSU, when, on 5 May 1943, as a squadron commander, he was shot down and killed by Fw 190s over the Gulf of Finland near Leningrad.

POLIKARPOV I-152 (I-15bis)

SPECIFICATIONS (I-15bis)

Crew: Pilot

Length: 20ft 7in (6.27m)

Wingspan: 33ft 5.5in (10.20m)

Height: 9ft 2.25in (2.80m)

Empty: 2,888lb (1,310kg)

Max T/O: 4,044lb (1,834kg)

Max Speed: 226mph (364km/h)

Range: 280 miles (450km)

Powerplant: Shvetsov M-25V

Output: 775hp (578kW)

Armament: Two 7.62mm machine guns in nose and two in wings

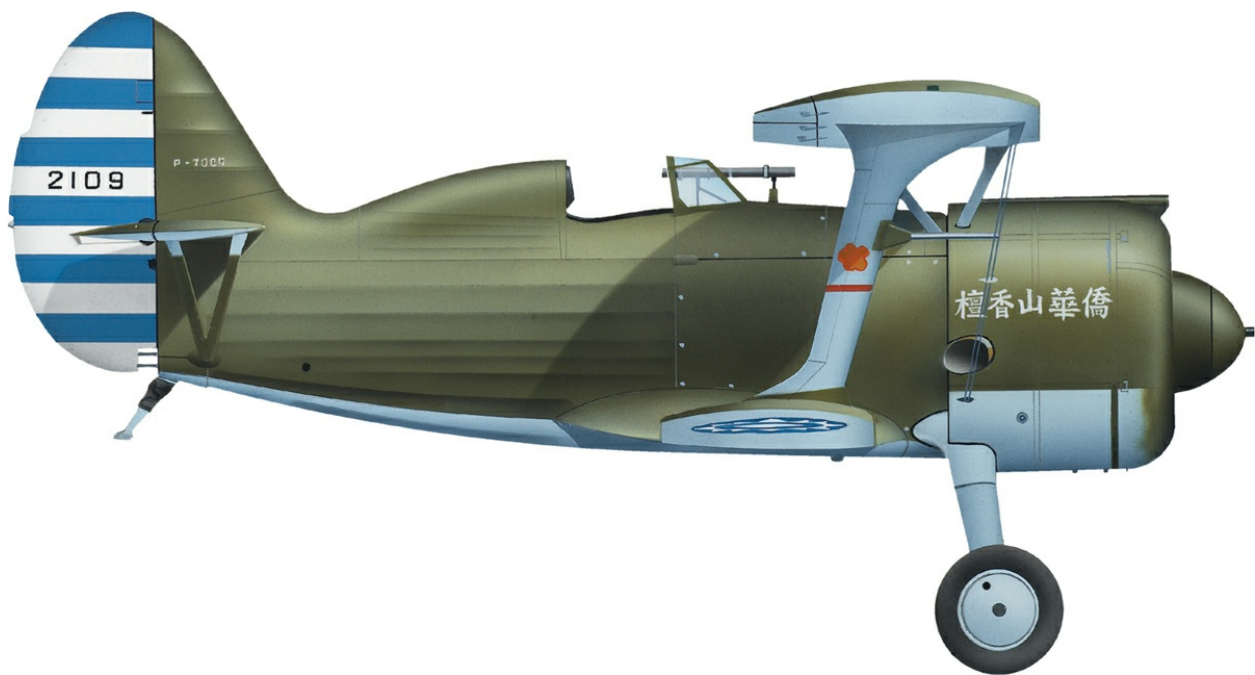
First Flight Date: early 1937

Although Polikarpov earned the distinction of building the world's first 'modern' monoplane interceptor in the I-16, it was also a major manufacturer of biplane fighters. Indeed, the revolutionary I-15 had flown just months prior to the I-16, its 'gulled' upper wing and I-type interplane struts giving the barrel-shaped fighter a distinctive appearance. Blessed with incredible manoeuvrability, a respectable top speed for the period and potent armament, the I-15 proved popular both in the USSR and in Spain, where it saw much action in the Spanish Civil War.

As a direct result of feedback from the latter conflict, Polikarpov redesigned the I-15 without the 'gulled' upper wing centre section, which pilots criticized for restricting their view of the ground in front of them on take-off and landing. Other improvements included the adoption of a long-chord cowling for the Shvetsov M-25 radial and increased fuel capacity. The I-15 was replaced on the production line (following the construction of 284 aircraft in the USSR and 287 by CASA in Spain) by

the I-15bis, later redesignated the I-152, in late 1937. Polikarpov would complete 2,408 I-152s over the next two years, these aircraft being used in the same conflicts as the I-16. Indeed, the I-152 often flew into action alongside the monoplane fighter. Substantial numbers of I-152s remained in service with the Soviet Air Force well into 1942, despite the aircraft proving little more than cannon fodder for the Luftwaffe's Bf 109 and Bf 110 fighters.

FIGHTER DETAILS



I-15bis 2109/P-7163 flown by Lt Liu, Chi-sheng, 21st PS/4th PG, Republic of China Air Force, Kwang-yang-ba, China, July 1939

This aircraft was flown by Liu during the defence of Chungking in the summer of 1939. The inscription *Tan Hsiang Shan Hua Chiao* 檀香山華僑 (Honolulu ex-Patriot Chinese) on the nose honours the Chinese community in Honolulu, whose donations supported the purchase of this aircraft. Liu claimed victories in this aircraft over Chungking in May and July 1939. 2109 was destroyed on the ground during a night raid on 1/2 September 1939



I-152 '30' of Snr Lt Vladimir Abramov, 71st IAP, Baltic Fleet Air Force, Leningrad Front, Soviet Union, summer 1941

This fighter, together with an I-153 displaying the tactical number '42', was flown by Vladimir Abramov. Unofficial sources state that it was while flying this aircraft, and also the I-153, that he scored no fewer than five aerial victories. Altogether, Abramov flew more than 600 combat sorties, participated in 67 aerial engagements and officially scored ten individual kills and 15 shared victories.

POLIKARPOV I-153 (I-15ter)

SPECIFICATIONS (I-153)

Crew: Pilot

Length: 20ft 3in (6.17m)

Wingspan: 32ft 9.75in (10.00m)

Height: 9ft 2.25in (2.80m)

Empty: 3,200lb (1,452kg)

Max T/O: 4,652lb (2,110kg)

Max Speed: 280mph (450km/h)

Range: 292 miles (470km)

Powerplant: Shvetsov M-62R

Output: 1,000hp (746kW)

Armament: Four 7.62mm or 12.7mm machine guns in nose; max bomb load of 441lb (200kg) or six 82mm rocket projectiles under wings

First Flight Date: mid-1938

The final word in the Polikarpov family of biplane fighters, the I-153 was fitted with a powerful Shvetsov M-62R radial and a retractable undercarriage, as well as a 'gull' wing centre section. Despite other manufacturers the world over embracing the modern monoplane fighter that Nikolai Polikarpov had pioneered in the early 1930s, he refused to abandon the biplane fighter layout, and the first I-153s entered frontline service as late as May 1939. No production variants of the basic I-153 were introduced during the fighter's brief two-year production life, although there were occasional armament modifications carried out 'in the field' by Red Air Force units.

Polikarpov delivered its last I-153 in late 1940, and although in production for barely 18 months, no fewer than 3,437 had been built in that time. Examples were supplied to the Chinese in 1940, who used them against the Japanese in a repeat of the Nomonhan Incident of the year before – the I-153 had actually made its operational debut during

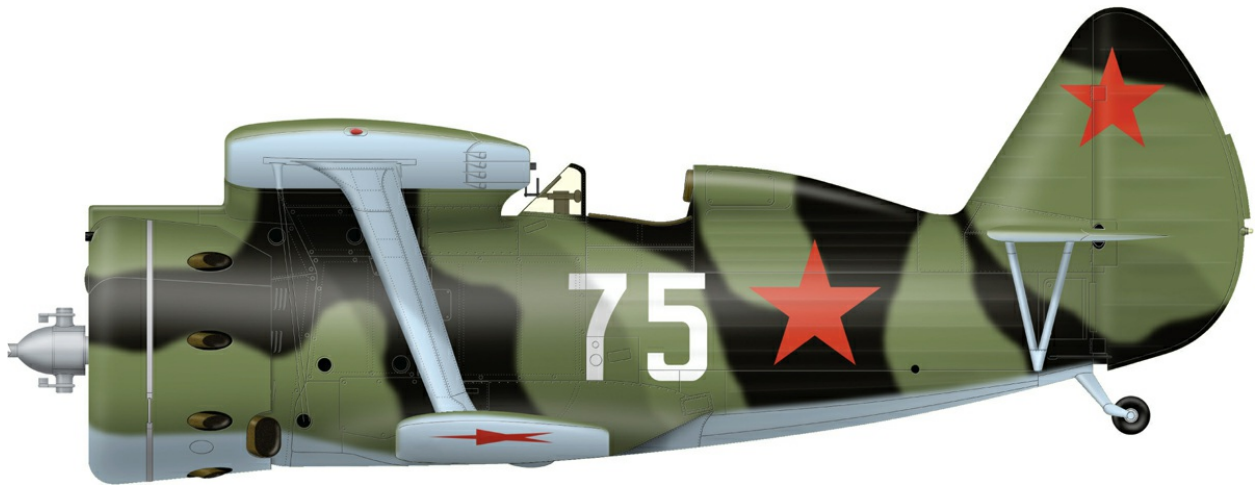
the Battles of Khalkhin Gol in Mongolia in 1939. Finland also pressed 11 I-153s into service following their capture during the 1939–40 Winter War, this number being doubled in the autumn of 1941 with the acquisition of a further 11 from captured stocks held by the Germans. Heavily involved in the opening months of the war on the Eastern Front, I-153s remained an important part of the Soviet fighter force into 1942, when they were relegated to the no less hazardous ground-attack role.

FIGHTER DETAILS



I-153 '69' of Lt Sergey Zhukovskiy, 127th IAP, Western Military District, Leningrad Front, Soviet Union, summer 1941

This aircraft was flown nine times by Lt Zhukovskiy, a squadron commander with 127th IAP, on 22 June 1941 – the opening day of the German invasion of the Soviet Union. He used it to claim one individual and three shared victories on this date, and he would subsequently see considerable action flying the La-5 with the 13th IAP and the 41st and 88th GIAPs. Zhukovskiy survived the war with 13 individual and 15 shared victories to his name.



I-153 '75' of Capt Petr Biskup, 71st IAP, Baltic Fleet Air Force, Bychye Pole, Soviet Union, summer 1942

This long-lived fighter saw intensive combat during 1941–42, being flown by the 71st IAP's No 1 Squadron CO Capt Petr Biskup, among other pilots. By the end of the war Biskup had downed five enemy aircraft and shared in the destruction of five more. At least two of these victories were achieved while flying the I-153.

PZL P.11

SPECIFICATIONS (P.11C)

Crew: Pilot

Length: 24ft 9.25in (7.55m)

Wingspan: 35ft 2in (10.72m)

Height: 9ft 4.25in (2.85m)

Empty: 2,529lb (1,147kg)

Max T/O: 3,968lb (1,800kg)

Max Speed: 242mph (389km/h)

Range: 435 miles (700km)

Powerplant: PZL Mercury VI.S2

Output: 600–645hp (447–481kW)

Armament: Two 7.7mm machine guns in forward fuselage and two in wings; max load of one 110lb (50kg) bomb under each wing

First Flight Date: August 1931

The final incarnation of the successful PZL family of high gull wing (also known as the 'Polish wing') monoplane fighters that could trace their lineage back to the two-seat P.W.S.1 of 1927, the P.11 was the staple fighter of the Polish Air Force at the time of the German invasion on 1 September 1939. Effectively an upgraded P.7, which had been one of the first all-metal monoplane fighters to attain operational service when it was issued to frontline squadrons in 1931, the P.11 airframe had been stressed to accept the more powerful Bristol Mercury engine in place of the Jupiter VIIF from the same source. The first of 200 P.11s ordered by the Polish Air Force entered service in late 1933.

Capable of reasonable speeds, highly manoeuvrable and well armed, the PZL fighter was also licence-built in Romania by I.A.R. to the tune of 144 airframes in two batches. Designated the P.11b and f, the aircraft were re-engined with the licence-built Gnome-Rhône 9K Mistral engine. After a period of several years out of production, PZL was ordered to re-

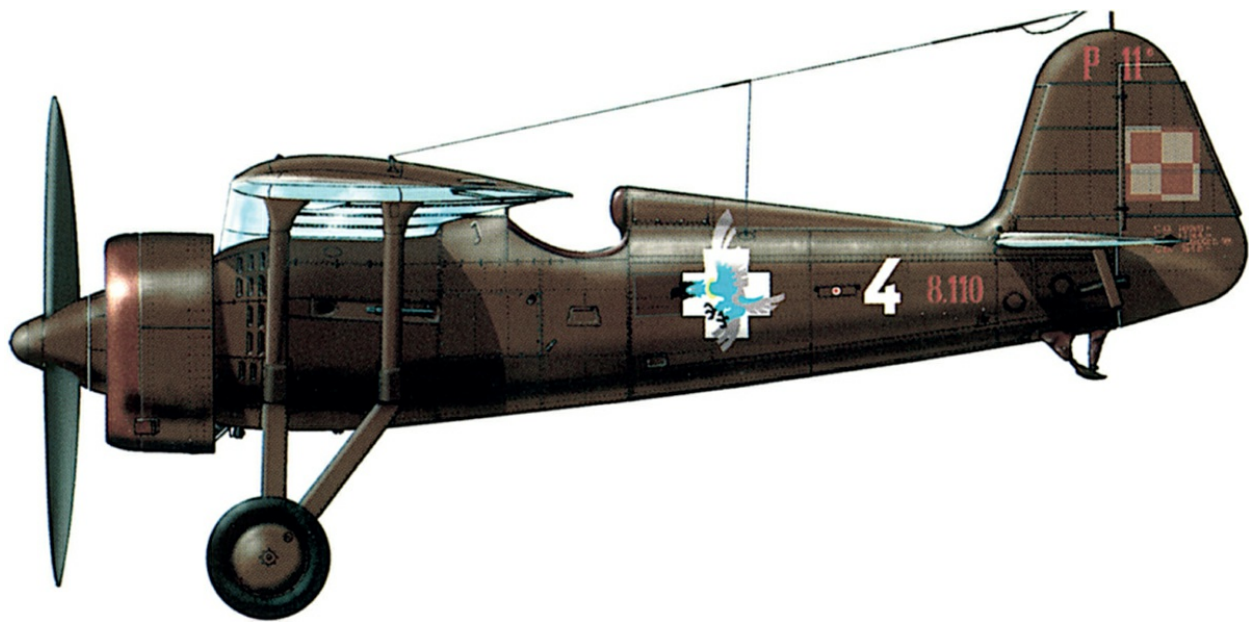
open the line as it became obvious that war with Germany was inevitable. The new P.11g was to be powered by the 840hp Mercury VIII engine, but it had only flown in prototype form by the time of the invasion. Despite being truly outclassed by their opponents in Bf 109s and Bf 110s, the 12 squadrons of P.11s that opposed the Luftwaffe's aerial assault on Poland claimed 125 German aircraft destroyed for the loss of 114 of their own number during the first few days of the *Blitzkrieg*.

FIGHTER DETAILS



P.11c 8.110 'White 4' of Kapral Stanislaw Brzeski, 152 Eskadra, Szpandowo, Poland, September 1939

Brzeski was downed by flak in this P.11c on 4 September 1939 while attacking a German balloon. He had already destroyed one the day before, thus becoming the only World War II ace to claim the destruction of an enemy observation balloon as part of his score. Escaping to Britain when Poland fell, Brzeski later 'made ace' flying with RAF Fighter Command.



P.11c 8.63 'White 2' of podporucznik Wacław Król, 121 Eskadra, Podlódów, Poland, September 1939

Boasting stripes across the fuselage, this P.11c was marked up as the unit commander's aircraft. Król claimed his first victory on 5 September 1939. He subsequently became the only Polish pilot to be credited with victories in four different theatres – Poland, France, Britain and North Africa.

REGGIANE Re.2000/2001/2002

SPECIFICATIONS (Re.2000)

Crew: Pilot

Length: 26ft 2.5in (7.99m)

Wingspan: 36ft 1in (11.00m)

Height: 10ft 6in (3.20m)

Empty: 4,563lb (2,070kg)

Max T/O: 6,349lb (2,880kg)

Max Speed: 329mph (529km/h)

Range: 870 miles (1,400km)

Powerplant: Piaggio P.XI RC 40

Output: 1,040hp (775kW)

Armament: Two 12.7mm machine guns in nose

First Flight Date: 24 May 1939

A subsidiary of large Italian aviation company Caproni, Reggiane produced a family of fighters modelled closely on the American Seversky P-35 of the late 1930s. The first to fly was the Re.2000, which also subsequently enjoyed the most success in terms of volume production. Designed by Roberto Longhi, the aircraft had an all-metal airframe and five-spar wing embodying integral fuel tanks. Powered by a Piaggio P.XI radial, the Re.2000 was ordered in modest quantities by the *Regia Aeronautica*, which already had the comparable Fiat G.50 and Macchi C.200 either in service or on order. Although just 17 aircraft were supplied to the Air Force, and a further eight to the *Aviazione Ausiliaria per la Regia Marina*, the Re.2000 was ordered in good numbers by Sweden (60) and Hungary (70). Indeed, the latter operator also acquired licence-production rights, and built a further 203 as the Mavag Hékja II, powered by the Gnome-Rhône 14Kfs radial.

In July 1940 Reggiane commenced testing an Alfa Romeo RA.1000 (licence-built Daimler-Benz DB 601) equipped Re.2000, which was

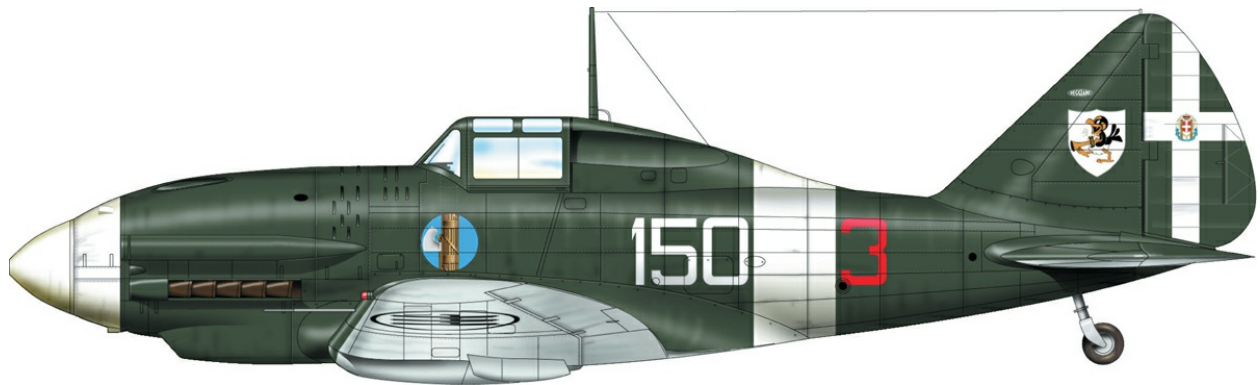
redesignated the Re.2001. A total of 252 were eventually built for the *Regia Aeronautica*, and these entered service from spring 1942. However, a shortage of engines soon saw the RA.1000 replaced by the Piaggio P.XIX radial, resulting in the creation of the Re.2002. Of the 224 aircraft that were constructed, at least 60 were delivered to the Luftwaffe after the September 1943 Armistice, and they were used as ground-attack aircraft primarily against the French resistance. A number of surviving Re.2002s from the *Regia Aeronautica* subsequently served with the Italian Co-Belligerent Air Force, and these aircraft bombed German naval vessels en route to Corfu and targeted Wehrmacht troops on the island of Cephalonia.

FIGHTER DETAILS



Re.2000 Héjja V.4+27 of Lt Imre Páncél, 1/1 'Dongó' Fighter Squadron, Staryj Oskol, Soviet Union, October 1942

Imre Páncél was the Royal Hungarian Air Force's premier ace, and his first three victories came in October 1942 while flying the obsolescent Re.2000 – 50 of the latter were committed to combat on the Eastern Front in 1941–42. Páncél was killed by Soviet anti-aircraft fire on 11 January 1943 while flying a fighter-bomber mission in a Bf 109F-4/B.



Re.2001 of Tenente Agostino Celentano, 150^a Squadriglia, 2° Gruppo Autonomo, San Pietro di Caltagirone, Sicily, May 1942

Enjoying more success than most with the relatively rare Reggiane fighter, Agostino Celentano was credited with six victories over Malta – his only other kill was claimed in North Africa the previous year while flying a G.50.

REPUBLIC P-43 LANCER

SPECIFICATION (P-43A)

Crew: Pilot

Length: 28ft 6in (8.69m)

Wingspan: 36ft 0in (10.97m)

Height: 14ft 0in (4.27m)

Empty: 5,996lb (2,720kg)

Max T/O: 8,480lb (3,847kg)

Max Speed: 356mph (573km/h)

Range: 650 miles (1,050km)

Powerplant: Pratt & Whitney R-1830-57 Twin Wasp

Output: 1,200hp (895kW)

Armament: Two 0.50in machine guns in forward fuselage and two in wings; provision for up to 320lb (145kg) of bombs under wings/fuselage

First Flight Date: mid-1940

The first fighter to emerge from the newly formed Republic Aviation Corporation, the P-43 Lancer relied heavily on the Seversky P-35 – the US Army Air Corps' (USAAC) first single-seat all-metal fighter with both a retractable undercarriage and an enclosed cockpit – for its overall layout due to the fact that both fighters had been created by Alexander Kartveli and his engineering team. The primary features which distinguished the P-43 from the smaller P-35 were its turbosupercharged Pratt & Whitney Twin Wasp R-1830-35 engine and large oval cowling, an inward retracting undercarriage housed in a wing that had dihedral from the roots, a revised canopy and extra wing guns.

The USAAC acquired 13 YP-43s in 1940, and after a thorough examination of these machines, committed to 54 P-43s, 80 P-43As (with the more powerful R-1830-49 engine) and 143 P-43A-1s, which had bigger wing guns and bomb racks. Although capable of speeds up to 356mph, and with a service ceiling of 38,000ft, the P-43 had already

been rendered obsolete due to fighter development in Europe by the time it entered service in May 1941. Most Lancers, therefore, served as advanced fighter trainers. No fewer than 125 of these aircraft were eventually transferred to the Chinese Air Force from 1942, where the P-43s quickly earned an unenviable reputation among pilots for leaking 'wet wing' fuel tanks that resulted in inflight fires. The Lancers were also insufficiently armoured, lacked self-sealing fuel tanks and suffered from turbo-supercharger unreliability. All surviving examples were replaced by P-40s in early 1944.

FIGHTER DETAILS



P-43A Lancer 2401/P12083 of Capt Chow, Chi-kai, Deputy CO of the 24th FS/4th FG, En-shih, China, October 1942

Chow was at the controls of this machine when he shot down a high-flying JAAF Ki-46-III 'Dinah' near Nan Cheng in October 1942. This was the first confirmed victory by a Chinese pilot flying the new P-43A. Prior to the arrival of the P-38 Lightning, the turbo-supercharger-equipped Lancer was the only Allied aircraft in China that could catch the high-flying 'Dinah' reconnaissance aircraft. The P-43As were delivered in their original USAAF colours, over which standard Republic of China Air Force markings were applied.



P-43A Lancer 2101/P-12012 of Capt Kao, You-hsin, CO of the 21st FS/4th FG, En-shih, China, late 1943

Kao found himself in the thick of the action in P-12012 on numerous occasions during the defence of Chang-the in late 1943. Seven P-43As originally delivered to the USAAF were transferred to the Chinese in 1942. Many of the 125 Lancers that were eventually handed over developed leaks in their fuel tanks shortly after they entered operational service. Leaking fuel came into contact with the turbo-supercharger and its hot exhaust pipes, often causing catastrophic fires.

REPUBLIC P-47 THUNDERBOLT

SPECIFICATIONS (P-47D-25)

Crew: Pilot

Length: 36ft 1.75in (11.02m)

Wingspan: 40ft 9.25in (12.43m)

Height: 14ft 2in (4.32m)

Empty: 10,000lb (4,536kg)

Max T/O: 19,400lb (8,800kg)

Max Speed: 428mph (688km/h)

Range: 475 miles (760km)

Powerplant: Pratt & Whitney R-2800-59 Double Wasp

Output: 2,300hp (1,715kW)

Armament: Eight 0.50in machine guns in wings; maximum bomb/rocket load of 2,000lb (454kg) on underwing racks

First Flight Date: 6 May 1941 (XP-47B)

The original P-47 design was produced to meet a 1940 US Army Air Corps (USAAC) requirement for a lightweight interceptor similar in size and stature to the Spitfire and Bf 109. Powered by Allison's V-1710-39 1,150hp inline engine, the XP-47A had just two 0.50in machine guns as armament and lacked protective armour or self-sealing tanks. However, combat reports from Europe proved the folly of a lightweight fighter, and the USAAC modified its requirements to include an eight-gun fitment, heavy armour plating and self-sealing fuel tanks. Republic responded with an all-new design powered, crucially, by a turbocharged R-2800 Double Wasp radial. Despite initial reliability problems with this engine, production of the fighter forged ahead.

In March 1943 the 56th FG gave the P-47C its combat debut with the Eighth Air Force in England, the group performing vital escort missions for B-17 and B-24 heavy bombers. Initial encounters with German fighters were not encouraging for Thunderbolt pilots, as their mount was

outmanoeuvred at low to medium altitudes and its engine performance was lacklustre – the aircraft's short range was also criticized. As combat tactics evolved, pilots learned how best to fly the Thunderbolt in order to effectively counter the more nimble Luftwaffe fighters. By the end of 1943, the first D-models had arrived in Britain, followed five months later by 'bubble top' Thunderbolts, which became the favoured mount thanks to their superior rearward visibility.

Aside from its use as a bomber escort, the P-47 also performed sterling work as a fighter-bomber in the ETO, MTO and the Pacific. The aircraft's ground-attack capabilities were put to good use by the RAF's South East Asia Command in India and Burma, where 800 Thunderbolt I/II's replaced venerable Hurricane II's from 1944. The ultimate Thunderbolt was the P-47N, with an uprated turbocharged R-2800-61 engine that was capable of producing 2,800hp. A total of 1,816 P-47Ns were built (out of a total of 15,636 Thunderbolts), the majority of which were put to use escorting B-29s on bombing raids on the Japanese home islands in 1945. Thunderbolts soldiered on with the USAF Air National Guard and a handful of other air arms into the 1950s.

FIGHTER DETAILS



P-47D Thunderbolt 42-26919/E4-E *Shirley Jane III* of 1Lt Edwin Fisher, 377th FS/362nd FG, Headcorn, Kent, 17 June 1944

1Lt 'Bill' Fisher was flying 42-26919 back from a sortie over France on 17 June 1944 when he spotted several V1s. Within minutes he had shot down all three of them. Although this was his only engagement with flying bombs, Fisher became the USAAF's joint top scorer against them. He opened his account against aircraft a few weeks later after transferring with his unit to the continent – within a month he had become a seven-victory ace. Fisher named his aircraft after his

wife.



Thunderbolt I HB975/WK-L of Sqn Ldr LC C Hawkins, No 135 Sqn, Chittagong, India, October 1944–December 1944

When No 135 Sqn re-equipped with Thunderbolts, its CO was Sqn Ldr Lee Hawkins. He adopted HB975 as his personal aircraft and he regularly flew it on operations until April 1945. The first time was 18 October, when he led a four-ship formation against a ground target. He also flew it on a number of long-range escorts to bombing raids on the Rangoon area.

SUPERMARINE SPITFIRE I/II

SPECIFICATIONS (SPITFIRE IA)

Crew: Pilot

Length: 29ft 11in (9.12m)

Wingspan: 36ft 10in (11.23m)

Height: 11ft 5in (3.48m)

Empty: 4,810lb (2,182kg)

Max T/O: 5,844lb (2,651kg)

Max Speed: 355mph (571km/h)

Range: 575 miles (925km)

Powerplant: Rolls-Royce Merlin II/III

Output: 1,030hp (768kW)

Armament: Eight 0.303in machine guns in wings; Mk IB two 20mm cannon in wings

First Flight Date: 5 March 1936

The only British fighter to remain in production throughout World War II, the exploits of the Spitfire are legendary. More than 20,000 were produced in mark numbers ranging from I through to 24, this total also including more than 1,000 built as dedicated Seafire fleet fighters for the Royal Navy. Designed by Reginald J Mitchell following his experiences with the RAF's Schneider Trophy winning Supermarine floatplanes of the 1920s and 1930s, prototype Spitfire K5054 first took to the skies on 5 March 1936, powered by the soon to be equally famous Rolls-Royce Merlin I engine. However, due to production problems encountered with the revolutionary stressed-skin construction of the fighter, it was to be another two-and-a-half years before the first examples entered service with Fighter Command.

Spitfire I/II's served exclusively with RAF squadrons on the home front, their pilots responsible for achieving impressive scores against the all-conquering Luftwaffe during the Battles of France and Britain and then taking the fight to the enemy in the opening stages of the offensive

against occupied western Europe in 1941. Although early-mark Spitfires were notorious for their modest machine gun armament, overheating engines due to inadequate cooling and short range, many of the pilots that flew the Mk Is and IIs regarded these machines as the best handling of the breed. They were seen as 'true aviators' aircraft' due to their excellent power-to-weight ratio and beautifully harmonized flight controls.

Production of the Spitfire I totalled 1,567 aircraft between May 1938 and March 1941, with the first of the Mk IIs (fitted with the more powerful Merlin XII, rated at 1,175hp) emerging from the newly completed Lord Nuffield shadow factory at Castle Bromwich in June 1940. A total of 921 Mk IIs were completed, and these aircraft remained in frontline service until early 1942. Surviving Spitfire I/IIs eventually reached RAF Training Command's operational training units, where a number of them served through to VE Day.

FIGHTER DETAILS



Spitfire IB X4272/QJ-D of Flg Off A C Bartley, No 92 Sqn, Manston, Kent, February 1941

X4272 was one of the rare Spitfire IBs fitted with drum-fed 20mm cannon that were delivered to No 92 Sqn in late 1940. Flg Off Tony Bartley used the aircraft to down He 111 'A1+AN' of 6./KG 55 off Southend, Essex, for his ninth victory while on patrol over the Thames Estuary on 3 February 1941. X4272 was later modified at Rolls-Royce into an interim Spitfire VB, and the fighter ended its days on test work at Supermarine.



Spitfire IIA P7916/SO-B of Sgt W J Johnson, No 145 Sqn, Tangmere and Merston, West Sussex, February–June 1941

Sgt 'Bill' Johnson regularly flew P7916/SO-B throughout the spring and early summer of 1941. Delivered to the unit on 22 February, it left No 145 Sqn on 1 June. Remarkably, P7916 survived until January 1945. On 1 March 1941 Flt Lt Mike Newling was flying it when he shared in the destruction of a Ju 88 over the Channel. A presentation aircraft, P7916 wore the de Montfort coat of arms surrounded anti-clockwise with the letters HMAH (Hosiery Manufacturers Association of Hinkley).

SUPERMARINE SPITFIRE V/VI

SPECIFICATIONS (SPITFIRE VC)

Crew: Pilot

Length: 29ft 11in (9.12m)

Wingspan: 36ft 10in (11.23m)

Height: 11ft 5in (3.48m)

Empty: 5,100lb (2,313kg)

Max T/O: 6,785lb (3,078kg)

Max Speed: 374mph (602km/h)

Range: 470 miles (756km)

Powerplant: Rolls-Royce Merlin 45/50/55/56

Output: 1,470hp (1,096kW)

Armament: Eight 0.303in machine guns or four 20mm cannon in wings; provision for one 500lb (227kg) or two 250lb (113kg) bombs externally

First Flight Date: December 1940 (Spitfire Mk V)

As the first Spitfire variant to see extensive service outside of Britain, the Mk V fought the Axis alliance over North Africa, the Mediterranean and in Australasia. The first attempts by Supermarine to upgrade the Mk I/II had seen the Mk III produced, the latter fighter being fitted with a 1,480hp Merlin XX, revised airframe, stronger undercarriage, clipped wings and a retractable tailwheel. However, all these improvements combined to slow down the production rate of the desperately needed fighter, so an order for 1,000 was cancelled and the much simpler Mk V was chosen instead.

Getting the improved aircraft into the frontline was a matter of great importance, as the arrival of new German fighters (the Bf 109F and, from the autumn of 1941, the Fw 190A) on the Channel Front had rendered the early marks increasingly ineffective. In order to speed up the delivery process, the Mk V had been created by simply pairing a Mk I/II fuselage with the new Merlin 45 engine, rated at 1,470hp. the new combination

proved to be so successful that 6,479 airframes would eventually be built. Thanks to this overwhelming production run, the Mk V bore the brunt of Fighter Command operations on virtually all fronts to which the RAF was committed between 1941 and late 1943.

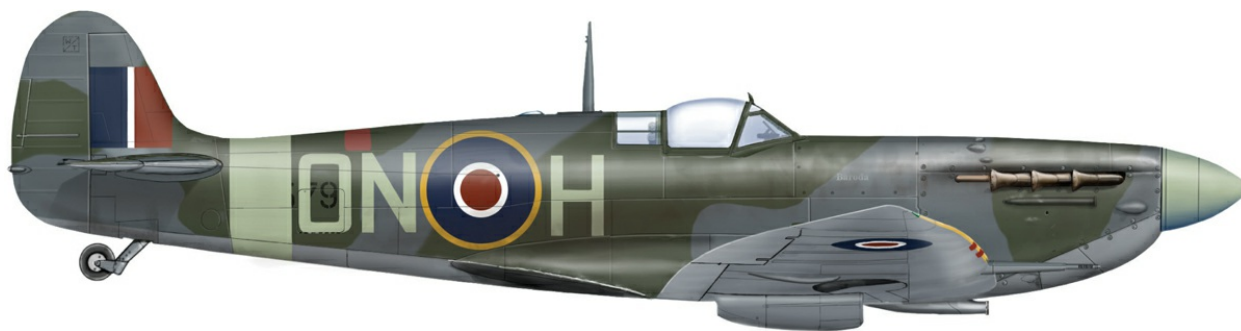
A specialist variant derived from the Mk V was the high-altitude optimized Mk VI, which used a 'tweaked' Merlin 47, a four-bladed propeller and had a pressurized cockpit. The aircraft had been created in response to a perceived threat from very high-altitude bombers that were reportedly on the cusp of mass production for the Luftwaffe. These never eventuated, and just 100 Spitfire VIs were subsequently built in modest numbers from late 1941 for Fighter Command.

FIGHTER DETAILS



Spitfire VB W3848/JU-H of Sgt PE G Durnford, No 111 Sqn, Debden, Essex, December 1941–February 1942

When, in the autumn of 1941, No 111 Sqn was switched to nightfighting duties, its Spitfire VBs were painted overall black and given other modifications for the role – the colours were retained until March 1942. Sgt Peter Durnford regularly flew W3848 throughout this period, and during the 'Channel Dash' on 12 February he probably destroyed a Bf 109 over the German fleet to register his first claim. Both W3848 and Peter Durnford survived the war.



Spitfire VI BR579/ON-H of Flt Lt MP Kilburn, No 124 Sqn, Gravesend, Kent, Debden, Essex, and Martlesham Heath, Suffolk, August–December 1942

BR579 was delivered to No 124 Sqn on 19 July 1942. It first saw action in the hands of Flt Lt Mike Kilburn, who subsequently downed four Fw 190s with the aeroplane between 19 August (Dieppe Raid) and 12 December – he claimed two fighters on that date while covering USAAF B-17s. This made him the most successful Spitfire VI pilot and BR579 the most successful individual aircraft of the 100 that were built.

SUPERMARINE SPITFIRE VII/VIII

SPECIFICATIONS (SPITFIRE LF VIII)

Crew: Pilot

Length: 31ft 3.5in (9.54m)

Wingspan: 36ft 10in (11.23m)

Height: 12ft 7.75in (3.86m)

Empty: 5,800lb (2,631kg)

Max T/O: 7,767lb (3,523kg)

Max Speed: 404mph (650km/h)

Range: 1,180 miles (1,900km) with external tanks

Powerplant: Rolls-Royce Merlin 66

Output: 1,720hp (1,282kW)

Armament: Two 20mm cannon and four 0.303in machine guns in wings; provision for 1,000lb (454kg) bomb load externally

First Flight Date: April 1942 (Mk VII)

Despite having mark numbers earlier than the Mk IX, both the Mk VII and VIII actually entered service well after it due to the substantial redesign embodied in both variants. Utilizing the Merlin 60 series engine, with its two-stage, two-speed supercharger, six-port exhaust, four-bladed propeller, longer nose and symmetrical underwing radiators, the Mk VII/VIII combined these powerplant improvements with a reworked, strengthened, fuselage, retractable tailwheel and revised 'C' wing that was fitted with shorter span ailerons and additional fuel tankage. Finally, most aircraft also had a distinctive pointed fin and rudder.

The Mk VII was built as a specialist high-altitude interceptor, with extended wingtips and a pressurized cabin. The Mk VIII was built to an identical specification but lacked the high-altitude features as it was intended to be a conventional fighter-bomber. The first of 140 Mk VIIIs entered squadron service in September 1942 as a replacement for the Spitfire Mk VI, and the fighter scored its first aerial victory later that

same month at 38,000ft. The Mk VIII, of which 1,658 were built from November 1942, made its service debut in 1943 and went on to equip units in the Mediterranean, the Balkans, the Middle and Far East and Burma. Aside from the RAF, the Royal Australian Air Force was the major user of the Mk VIII, receiving no fewer than 410 examples from October 1943.

FIGHTER DETAILS



Spitfire VII MD120/NX-O of Sqn Ldr J J O'Meara, No 131 Sqn, Culmhead, Somerset, March–June 1944

No 131 Sqn was affiliated with the County of Kent, and some of its Spitfire VIIs that were finished in high-altitude colours and fitted with extended wingtips were suitably adorned. One such aircraft was MD120/NX-O, christened *SPIRIT OF KENT*. The mount of CO Sqn Ldr 'Orange' O'Meara, who had 12 victories to his name, MD120 was flown by him on No 131 Sqn's first operation with the Spitfire VII. It was later transferred to No 154 Sqn and eventually scrapped in March 1945.



Spitfire VIII A58-602/RG-V of Wg Cdr R H M Gibbes, No 80 Fighter Wing, Tarakan, Borneo, January–April 1945

After distinguished service in the Middle East, where he had gained 12 victories, Wg Cdr 'Bobby' Gibbes joined No 80 Wing in the Southwest Pacific as Wing Leader in October 1944. A58-602 was his personal aircraft, and it carried his initials, while the 'V' recalled the usual letter of his various

Kittyhawks in the desert. It is in the standard RAF temperate colour scheme and carries the 'Grey Nurse' sharkmouth marking that adorned Spitfires of No 457 Sqn. It also featured his impressive 'scoreboard'.

SUPERMARINE SPITFIRE IX

SPECIFICATIONS (SPITFIRE F IX)

Crew: Pilot

Length: 31ft 1in (9.47m)

Wingspan: 36ft 10in (11.23m)

Height: 12ft 7.75in (3.86m)

Empty: 5,800–6,200lb (2,631–2,812kg)

Max T/O: 9,500lb (4,309kg)

Max Speed: 408mph (657km/h)

Range: 980 miles (1,577km) with external tanks

Powerplant: Rolls-Royce Merlin 61

Output: 1,565hp (1,167kW)

Armament: Two 20mm cannon and four 0.303in machine guns in wings; provision for 1,000lb (454kg) bomb load externally

First Flight Date: early 1942

Through the desperate years of 1941–42, the Spitfire was outclassed by firstly the Bf 109F/G and then the potent Fw 190A. Indeed, it was the appearance of the ‘Butcher bird’ from Focke-Wulf on the Channel Front in September 1941 that provided the impetus for a new version of Spitfire to help restore the balance – thus was born the Spitfire Mk IX. Built as a stop-gap fighter until the comprehensively re-engineered Mk VII and VIII could be put into production, the IX comprised a lightly modified Mk V airframe fitted with an uprated Merlin 61 engine. Despite its temporary nature, the ‘new’ fighter was so warmly received by frontline units within Fighter Command that no fewer than 5,665 were built between 1942 and 1945.

The secret to the ‘new’ Spitfire’s success can be directly attributed to its Rolls-Royce powerplant, which had been fitted with a two-stage/two-speed supercharger that would cut in automatically at pre-determined altitudes, but could also be manually controlled at lower ceilings. The

earlier Mk V, powered by the Merlin 45, had had to make do with a single-stage/single-speed supercharger, which was fine at low to medium altitude, but rather 'breathless' at the more rarefied ceilings above 20,000 ft – the chosen battleground of the *Jagdwaffe*. The Merlin 61 changed all this, however, as its more powerful supercharger forced a greater volume of air through the engine cylinders, and thus prevented performance tailing off in the thinner altitudes that Fighter Command was having to fight in.

Mk IXs received the more powerful Merlin 63 from early 1943, and this engine was in turn replaced by the Merlin 66 (producing 1,720hp) from later that same year. Towards the end of the Mk IX's production, a number of aircraft were built with the cut-down rear fuselage and 'tear-drop' canopy trialled on a Spitfire Mk VIII and adopted by the Packard Merlin 266-powered Spitfire Mk XVI. They also received the latter fighter's new upper engine cowling that incorporated a distinct bulged top surface to allow space for the modified intercooler of the Packard Merlin 266, which had an integral header tank.

FIGHTER DETAILS



Spitfire IX EN315/ZX-6 of Flt Lt E Horbaczewski, No 145 Sqn Polish Fighting Team, La Fouconnerie, Tunisia, April 1943

One of the most publicized units to fly Spitfires in the desert was the so-called 'Polish Fighting Team' that was embedded within No 145 Sqn. As shown here, the unit's Mk IXs wore individual code numbers in place of letters and also had the red/white Polish checkerboard marking on the nose. The Team's most successful pilot was Flt Lt Eugeniusz Horbaczewski, and he regularly claimed three victories with EN315. Team CO Sqn Ldr Stanislaw Skalski also claimed a victory at its controls.



Spitfire IX MH660/V-Y of Flt Lt WE Schrader, No 1435 Sqn, Brindisi, Italy, March 1944

Following service in Malta No 1435 Sqn moved to Italy, and among its pilots was New Zealander Warren Schrader who began his path to aedon with the unit. MH660 joined No 1435 Sqn in early 1944, and Schrader flew it several times in March. The fighter wore a unit badge on the tail and had a dragon's head as a personal marking under the cockpit. MH660 remained with No 1435 Sqn until it crashed into the Adriatic in September after suffering an engine fire.

SUPERMARINE SPITFIRE XII

SPECIFICATIONS (SPITFIRE XII)

Crew: Pilot

Length: 31ft 10in (9.70m)

Wingspan: 32ft 7in (9.93m)

Height: 11ft 0in (3.35m)

Empty: 5,600lb (2,540kg)

Max T/O: 7,400lb (3,357kg)

Max Speed: 393mph (632km/h)

Range: 380 miles (610km)

Powerplant: Rolls-Royce Griffon III/IV

Output: 1,735hp (1,294kW)

Armament: Two 20mm cannon and four 0.303in machine guns in wings; provision for one 500lb (227kg) or two 250lb (113kg) bombs externally

First Flight Date: 24 August 1942

This interim model Spitfire was the first to use the newly developed Rolls-Royce Griffon engine, which had been designed with one-third greater capacity to allow improved levels of horsepower to be achieved. The airframe initially developed to harness this power was the Mk IV (later redesignated the Mk XX), but a role change for the fighter mid-development saw the once high-altitude optimized Griffon Spitfire altered to achieve its best performance at low level in order to counter Fw 190 'hit and run' raiders that were causing problems along the south coast of England. The resulting Mk XII featured a restyled engine cowling to house the larger Griffon, clipped 'C' wings for optimum performance 'down low' and a pointed rudder.

With the airframe employed based closely on the Mk V, and then the Mk VIII, the Mk XII had no extra fuel capacity. With the Griffon being appreciably 'thirstier' than its predecessor, the fighter's range was even worse than that of the previously short-legged Merlin Spitfire. However,

the role for which the Mk XII was used did not require long searching patrols to be flown, and the first of just 100 was delivered to the RAF for two home defence squadrons in February 1943. The Mk XII proved successful in its chosen role, and was also used for shipping reconnaissance and fighter sweeps over France until finally replaced by the vastly improved Mk XIV in September 1944.

FIGHTER DETAILS



Spitfire XII EN620/DL-M of Flt Lt G Stenborg, No 91 Sqn, Westhampnett, West Sussex, September 1943

EN620 had a successful career beginning on 24 August 1943 when Flg Off W G Mart shared in the destruction of an enemy fighter. A few days later, Australian Flt Sgt 'Red' Blumer used the fighter to claim an Fw 190 near Lille. Finally, Flt Lt Gray Stenborg was at its controls on 23 September when he downed a Bf 109G northeast of Rouen. EN620 later transferred to No 41 Sqn and survived the war to be scrapped in 1946.



Spitfire XII MB862/EB-E of Flt Lt W N Stowe, No 41 Sqn, Lympne, Kent, September 1944

Delivered to No 41 Sqn in August 1943, MB862 saw extensive service with the unit and was damaged in combat several times. In mid-1944 it became the regular aircraft of future Griffon Spitfire ace Canadian Bill Stowe. On 10 September MB862 was damaged in a wheels-up landing in what proved to be No 41 Sqn's final Spitfire XII 'prang' on operations. The damage was not

terminal, and MB862 was repaired and used by No 595 Sqn prior to being scrapped in 1946.

SUPERMARINE SPITFIRE XIV

SPECIFICATIONS (SPITFIRE XIV)

Crew: Pilot

Length: 31ft 8in (9.96m)

Wingspan: 36ft 10in (11.23m)

Height: 12ft 8in (3.86m)

Empty: 6,600lb (2,994kg)

Max T/O: 9,772lb (4,433kg)

Max Speed: 448mph (721km/h)

Range: 850 miles (1,368km) with external tanks

Powerplant: Rolls-Royce Griffon 65

Output: 2,050hp (1,528kW)

Armament: Two 20mm cannon and four 0.303in machine guns in wings; provision for one 500lb (227kg) or two 250lb (113kg) bombs externally

First Flight Date: early 1943

The Mk XIV was without a doubt *the* Spitfire that commanded the most respect! The reason for this was simple – the ‘state-of-the-art’ Griffon 65/66 engine produced almost too much torque for the essentially pre-war design to handle, particularly when gathering speed for take-off. Indeed, a number of early Mk XIV pilots reported that the aircraft felt as if it wanted to ‘rotate around the propeller’, rather than the other way round. These longitudinal problems aside, the Spitfire Mk XIV was an awesome fighter to fly thanks to the generous levels of horsepower produced by its Griffon engine – 2,050hp to be precise. Granted, it may have ‘put a bit of weight on around the middle’ thanks to Supermarine engineers strengthening the fuselage in preparation for the fitment of the new powerplant, but the standard production F XIVE could nevertheless attain a top speed of 448mph in horizontal flight and climb to 43,000ft.

Based on the Mk VIII airframe, most Mk XIVs featured the distinctive high-back Spitfire fuselage. However, as with late-build Mk IXs and most

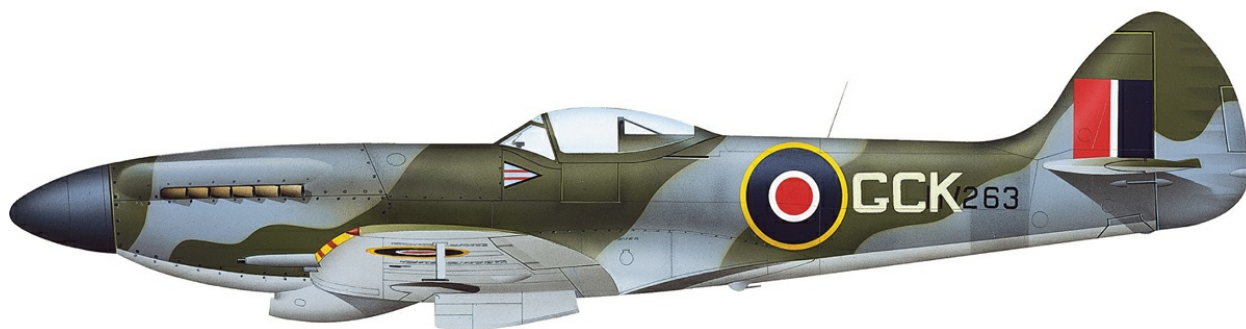
Mk XVI's, a number of Mk XIV's also featured the cut-back fuselage and 'tear-drop' canopy. Only 957 production Mk XIV's were completed from late 1943, with perhaps the type's finest hour coming in mid-1944 when its straightline speed was used to great effect to counter the V1 menace during Air Defence of Great Britain Anti-Diver patrols over southeast England – the Spitfire XIV could outpace all other frontline types, including the Tempest V. Having helped defeat the V1s, six squadrons of Mk XIV's were then used by the 2nd Tactical Air Force as its primary high-altitude air superiority fighter in northern Europe from December 1944. A considerable number of Griffon Spitfires were also sent to units in the Far East in the last year of the war, although for the most part they arrived too late to see action against the Japanese.

FIGHTER DETAILS



Spitfire XIV RB188/DL-K of Flt Lt H D Johnson, No 91 Sqn, West Malling, Kent, July 1944

Flt Lt 'Johnny' Johnson was one of the most successful Spitfire pilots during the V1 campaign with 13 and 1 shared destroyed. Four of them were claimed with RB188, which was also used by other pilots to destroy two more V1s. The aircraft, which carried the stunning nose art of a naked red-head riding a V1, later served on the Continent with Nos 130 and 350 Sqns and was eventually sold to the Royal Thai Air Force post-war.



Spitfire XIV MV263/GCK of Wg Cdr G C Keefer, No 125 Wing, B 106 Twente, the Netherlands, and B 118 Celle, Germany, April 1945

During the final weeks of the war No 125 Wing Leader Wg Cdr George Keefer led his wing in this aircraft, which, as was usual at the time, carried his initials and rank pennant. He made a number of claims in the 'bubble-hooded' MV263, including downing a Bf 109 and an Fw 190 (taking his final tally to 12) and destroying five Bf 109s on the ground. MV263 survived the war to later serve in the Belgium Air Force.

SUPERMARINE SPITFIRE XVI

SPECIFICATIONS (SPITFIRE F XVIIE)

Crew: Pilot

Length: 31ft 1in (9.47m)

Wingspan: 36ft 10in (11.23m)

Height: 12ft 7.75in (3.86m)

Empty: 5,800–6,200lb (2,631–2,812kg)

Max T/O: 9,500lb (4,309kg)

Max Speed: 408mph (657km/h)

Range: 980 miles (1,577km) with external tanks

Powerplant: Rolls-Royce Merlin 66/Packard Merlin 266

Output: 1,720hp (1,282kW)

Armament: Two 20mm cannon and two 0.50in machine guns in wings; provision for 1,000lb (454kg) bomb load externally

First Flight Date: mid-1944

Unlike the numerous Spitfire variants that preceded the Mk XVI, this version of the famous Supermarine design was used principally as a ground-attack aircraft, rather than in its more familiar fighter role. This change in function, if not in form, graphically illustrated that the true versatility of the design had been realized during its long production life. Initially externally similar in appearance to its more common precursor the Mk IX, the Mk XVI was deemed to warrant a new mark number because it was powered by a fully imported, US-built, Packard-Merlin 266 engine.

The first Mk XVI's (of a production run totalling 1,054 aircraft) were issued to frontline units in the autumn of 1944, these machines having the traditional high-back fuselage and pointed rudder of the late-build Mk IXs. However, in response to requests from pilots for better visibility (aircrew had complained about the obstructed view back over their shoulders since the first Mk Is entered service in the summer of 1938), a

cut-down fuselage version that featured a 'tear-drop' canopy was introduced from February 1945. Thanks to the exceptional power output of the Packard-Merlin 266 at low-level, the Mk XVI became the ideal candidate for close-attack work in support of the Allied armies fighting their way into Germany. So successful was the aircraft at precision bombing that in the last year of the war, the Spitfire Mk XVI proved to be more usefully employed by the Allies as a dedicated ground-attack aircraft than in its proven dayfighter role.

FIGHTER DETAILS



Spitfire XVI TB900/GE-D of Sqn Ldr R A Lallemand, No 349 (Belgian) Sqn, B 106 Twente, the Netherlands, and B 113 Varrelbusch, Germany, April–May 1945

Ace Sqn Ldr Raymond Lallemand was given command of his countrymen in No 349 Sqn in March 1945. Following brief service with No 127 Sqn, TB900 had been presented to the 2nd TAF in tribute to Prime Minister Winston Churchill and delivered to No 349 Sqn. Probably because of its emotive name, the fighter became Lallemand's mount, and in addition to his rank pennant and impressive scoreboard of both aircraft and vehicles destroyed, it also wore a cockerel's head.

TB900 was scrapped in 1946.



Spitfire XVI TB752/KH-Z of Sqn Ldr H P M Zary, No 403 Sqn RCAF, B 114 Diepholz, Germany, April–June 1945

In early 1945 'Hank' Zary became CO of No 403 Sqn, and on 21 April he was flying TB752 when he downed a Bf 109 near Schnackenburg. He thus became the final No 403 Sqn pilot to 'make ace'. Four days later, when flown by Flg Off David Leslie, TB752 downed an Fw 189. Finally, on 1 May, Flt Lt Robert Young destroyed an Fw 190 in it. The TB752 aircraft has been on display in the Spitfire Memorial Museum at Manston, Kent, since 1981.

SUPERMARINE SEAFIRE I/II/III

SPECIFICATIONS (F III)

Crew: Pilot

Length: 30ft 2.5in (9.21m)

Wingspan: 36ft 10in (11.23m)

Height: 11ft 5.5in (3.49m)

Empty: 6,204lb (2,814kg)

Max T/O: 7,640lb (3,465kg)

Max Speed: 348mph (560km/h)

Range: 725 miles (1,167km) with external tank

Powerplant: Rolls-Royce Merlin 55

Output: 1,470hp (1,096kW)

Armament: Two 20mm cannon and four 0.303in machine guns in wings; provision for one 500lb (227kg) or two 250lb (113kg) bombs externally

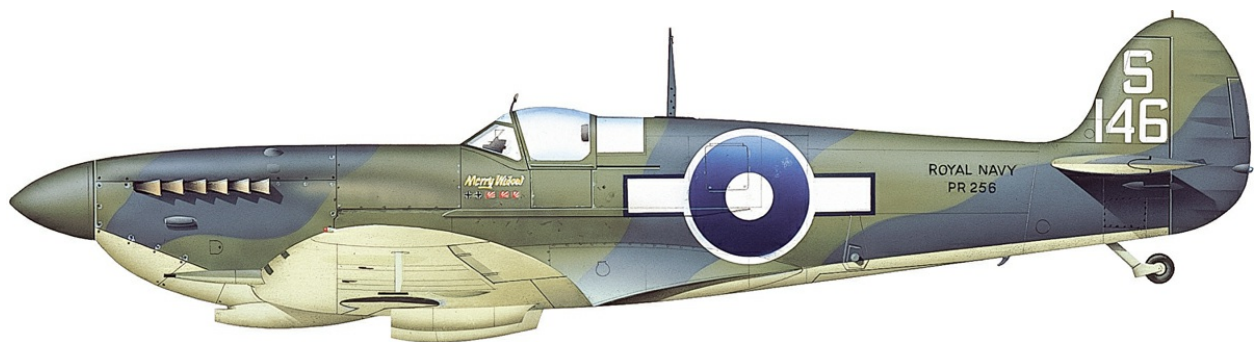
First Flight Date: 7 January 1942

Delayed from reaching production by the RAF's priority on all Spitfire production, the first navalized example of the Supermarine fighter did not fly until January 1942 – almost two years after the Royal Navy had inquired whether a 'Sea Spitfire' could be produced. Although not ideally suited to carrier flightdeck operations due to its narrow-track undercarriage and less than robust construction, the Seafire nevertheless provided the Fleet Air Arm with its first truly modern fighter of the conflict. A total of 20 frontline units would receive Seafires during World War II, and the aircraft fought over North Africa and the Mediterranean, Norway, Sicily, the Normandy beaches, western Europe and the Far East.

The first aircraft provided to the fleet were ex-RAF Mk VBs, fitted with a vee frame arrestor hook, a strengthened undercarriage and catapult spool. Some 166 Mk VBs were converted into Seafire Mk IBs and delivered between February 1942 and July 1943. The next variant to enter service was the Mk II, which was based on the Mk VC and retained

the latter's non-folding wings. Three sub-variants were built, using different versions of the Merlin engine or incorporating cameras for the photo-reconnaissance mission. The final (and most numerous) wartime Seafire variant was the Mk III, which was fully navalized in that it at last had folding wings in order to maximize deck storage space – it was also powered by a later generation Merlin 55, turning a four-bladed propeller. The first examples entered service in April 1943, and the Mk III remained in production until mid-1945, by which time 2,440 had been built.

FIGHTER DETAILS



Seafire III PR256 of Sub Lt RH Reynolds, 894 NAS, HMS *Indefatigable*, Okinawa, April 1945

When he sailed with the British Pacific Fleet to support the US landings on Okinawa, Sub Lt Reynolds already had two shared victories to his credit. Because of their limited range, the Seafires were used for fleet defence only, and early on 1 April 1945 Reynolds succeeded in downing three A6M Zero-sen kamikazes during the course of one mission. In so doing he became the Royal Navy's only Seafire ace. PR256 was decorated with its pilot's score, and the fighter survived the war.



Seafire III NN300 of Lt Cdr G C Baldwin, 807 NAS/4th NFW, HMS *Hunter*, Singapore, September 1945

Seafires of the 4th Naval Fighter Wing, under its leader Lt Cdr George Baldwin, conducted operations along the Burmese coast, harrying the retreating Japanese. NN300 was Baldwin's personal mount, and as such it was stripped of its camouflage and had black identity markings and codes applied. It was used by him when HMS *Hunter* returned to Singapore to re-occupy the island.

VOUGHT F4U/FG-1 CORSAIR

SPECIFICATIONS (F4U-1D)

Crew: Pilot

Length: 32ft 9.5in (9.99m)

Wingspan: 40ft 11.75in (12.49m)

Height: 15ft 0.25in (4.58m)

Empty: 8,873lb (4,025kg)

Max T/O: 13,846lb (6,280kg)

Max Speed: 392mph (631km/h)

Range: 1,562 miles (2,514km)

Powerplant: Pratt & Whitney R-2800-8 Double Wasp

Output: 2,000hp (1,491kW)

First Flight Date: 29 May 1940

Armament: Six 0.50in machine guns in wings; two 1,000lb (454kg) bombs or eight rocket projectiles externally

Designed as a lightweight fighter built around the most powerful piston engine then available, Vought's prototype XF4U-1 was ordered by the US Navy in June 1938 following a study of the company's V-166 proposal. In order to harness the immense power of the Pratt & Whitney XR-2800 Double Wasp engine, the largest diameter propeller fitted to a fighter up to then had to be used by the prototype – sufficient ground clearance for the propeller was achieved through the use of an inverted gull wing. The future looked very promising for the aircraft, but subsequent modifications incorporated into the design as a result of lessons learned in combat over Europe left the Corsair unfit for carrier use. It was therefore left to the US Marine Corps to debut the aircraft in combat from Pacific island bases in February 1943, when VMF-124 made its first patrols from Guadalcanal in F4U-1 'birdcage' aircraft.

Just 688 framed canopy 'Dash-1s' were built before production switched to the more familiar 'bubble' canopy F4U-1A, this aircraft

featuring a raised cockpit, strengthened landing gear and a small spoiler near the leading edge of the starboard wing to improve directional stability when the wheels touched the ground. All these modifications were deemed necessary to render the Corsair suitable for carrier use. Nevertheless, the US Navy remained wary about sending F4Us to sea until mid-1944, by which time the Royal Navy's Fleet Air Arm had been operating Corsairs from its carriers for more than six months. Ashore, a clutch of US Navy squadrons had been taking the fight to the Japanese, operating alongside similarly equipped US Marine Corps units.

Aside from the 4,675 F4U-1A/C/Ds built by Vought, Brewster constructed 735 aircraft and Goodyear 4,014 (the latter designated FG-1s). The final production version of the Corsair built in World War II was the F4U-4, which featured a bigger engine and four-bladed propeller. The Corsair enjoyed a prosperous post-war career that lasted beyond the Korean War. Indeed, the final F4U-7 did not roll off the Vought production line until 31 January 1952, this aircraft being the 12,571st, and last, Corsair built.

FIGHTER DETAILS



F4U-2 Corsair (BuNo unknown) of Maj E H Vaughan, VMF(N)-532, Engebi Island, Eniwetok Atoll, spring 1944

One of only 32 AI radar-equipped F4U-2 nightfighters converted from F4U-1s, this aircraft was assigned to VMF(N)-532's CO, Maj Everette H Vaughan, who named it *Shirley June* after his wife.

The squadron was one of the most successful US Marine Corps nightfighter units and began operations in the Solomon Islands before moving to Tarawa. Later, VMF(N)-532 was based on Saipan, from where it flew night combat air patrols as far as Guam. The unit returned to Marine Corps Air Station Miramar, California, in late October 1944.



Corsair IV KD658 of Lt R H Gray, 1841 NAS, HMS *Formidable*, Japan, August 1945

1841 NAS participated in attacks by the British Pacific Fleet on the Japanese home islands in July and August 1945, with airfields and shipping being favourite targets for the marauding Corsair pilots. On 9 August, when Lt 'Hammy' Gray was leading a mission in KD658, he spotted two destroyers and their escorts in Onagawa Wan Bay. Despite very heavy fire, the Corsairs sank the escort *Amasuka*. However, Gray was killed during the attack. For his gallantry, he was posthumously awarded the Victoria Cross.

WESTLAND WHIRLWIND I

SPECIFICATIONS (WHIRLWIND I)

Crew: Pilot

Length: 32ft 3in (9.83m)

Wingspan: 45ft 0in (13.72m)

Height: 10ft 6in (3.20m)

Empty: 8,310lb (3,770kg)

Max T/O: 11,388lb (5,165kg)

Max Speed: 360mph (579km/h)

Range: 800 miles (1,287km)

Powerplants: two Rolls-Royce Peregrine I engines

Output: 1,770hp (1320kW)

Armament: Four 20mm cannon in nose; 1,000lb (454kg) bomb load under wings

First Flight Date: 11 October 1938

Built to a 1935 Air Ministry specification calling for a twin-engined fighter, the Whirlwind became the first of its type to enter service with the RAF in mid-1940. At the heart of the Westland design was its impressive quartet of 20mm cannon, which were fitted in response to the specification's stipulation that the chosen aircraft had to be a 'cannon fighter'. Well thought out and beautifully crafted, the Whirlwind also possessed excellent handling characteristics and an impressive top speed at all operational altitudes. The aircraft's operational career would be adversely affected by the unreliability of its unique Peregrine engines, however.

Developed from the highly successful Kestrel inline engine of the 1930s, the Peregrine was never able to repeat the success of its forebear, or the superlative Merlin, which utilized a similar V12 inline layout. Many at Westland pleaded to be able to swap the Peregrines for Merlins, but the latter were in short supply in 1940, and all production was channelled towards the Spitfire and Hurricane. The Whirlwind was left

to struggle on, and the first production examples finally reached the frontline in mid-1940 – eight months behind schedule. By 1941 it was obvious that single-engined fighters could perform all the tasks demanded of Fighter Command, so Whirlwind production was stopped in January 1942 after the completion of just 116 aircraft – building a Whirlwind took three times as much metal alloy as a Spitfire. Surviving Whirlwinds were converted into fighter-bombers in June 1941, and they operated in this role on the Channel Front until the type's replacement by the Typhoon in December 1943.

FIGHTER DETAILS



Whirlwind I P6969/HE-V of No 263 Sqn, Exeter, Devon, February 1941

The fourth production Whirlwind I, this aircraft was delivered to No 263 Sqn in July 1940. The unit was also equipped with Hurricane Is at this time, and the last of the Hawker fighters was not replaced until November of that year when No 263 Sqn was posted to Exeter airport from Drem, near Edinburgh. P6969 was lost while trying to intercept a German Ar 196 floatplane 12 miles south of Start Point on 8 February 1941.



Whirlwind I P7056/HE-W of No 263 Sqn, Warmwell, Dorset, August 1943

Delivered to the RAF on 30 June 1941, this aircraft would serve with Nos 263 and 137 Sqn over the next two years. It would also spend time with the Station Flight at Colerne, in Wiltshire. The fighter's nose art was applied by Sgt R C 'Bob' Charles, who flew 19 operations on Whirlwinds from June 1943 until No 263 Sqn converted to Typhoons in December 1943.

YAKOVLEV Yak-1/7

SPECIFICATIONS (Yak-7B)

Crew: Pilot

Length: 27ft 9.5in (8.47m)

Wingspan: 32ft 9.75in (10.00m)

Height: 9ft 0.25in (2.75m)

Empty: 5,467lb (2,480kg)

Max T/O: 6,680lb (3,030kg)

Max Speed: 382mph (615km/h)

Range: 510 miles (820km)

Powerplant: Klimov M-105PF

Output: 1,260hp (940kW)

Armament: One 20mm cannon in propeller hub and two 12.7mm machine guns in upper cowling; provision for 441lb (200kg) bomb load or six 82mm rockets under wings

First Flight Date: 13 January 1940 (I-26/Yak-1) and 4 July 1940 (UTI-26/Yak-7V)

Yakovlev were responsible for producing the most successful series of fighter aircraft used by the Soviet Union during World War II, and the first to enter service was the Yak-1. Built in response to a 1938 requirement for a single-engined 'frontal' fighter, Yakovlev's I-26 was chosen as the winner from several proposals put forward. Later redesignated Yak-1 in recognition of its design bureau, the small fighter was of mixed plywood and metal construction and powered by the ubiquitous Klimov M-105F engine. The first aircraft to enter service were considered underpowered and overweight, and Yakovlev set about lightening the fighter (by cutting down the rear fuselage decking) and fitting the more powerful M-105PF engine in place of the F-model. However, it would be early 1943 before the first revised Yak-1Ms reached the frontline, and in the meantime the standard Yak-1 carried the fight to the Germans.

Around 400 were available when the USSR was invaded, and

production was briefly halted when the entire Yakovlev production line was shifted 1,000 miles further east to avoid being captured. This proved to be a critically important move, allowing the company to complete 8,721 Yak-1s through to 1944 when production ended.

The very similar Yak-7 was initially built as a two-seat trainer variant of the Yak-1, but its simpler construction and lighter weight, giving it an improved performance, also saw the aircraft chosen for the low-level fighter-bomber role (in single-seat configuration, with the space previously occupied by a seat being filled by an additional fuel tank). Later Yak-7Bs also incorporated the numerous upgrades featured in the late-build Yak-1M, specifically the fitting of the M-105PF which was 130hp more powerful than the M-105PA in the Yak-7A. With this improved engine, the Yak-7B's top speed was 372mph, it had a much faster rate of climb, and the fighter was more manoeuvrable both in the horizontal and vertical planes. However, the defects that plagued the original M-105 (glycol and oil overheating and persistent oil leaks) remained. Nevertheless, 6,399 Yak-7s (around 5,000 of which were -7Bs) had been completed when production fully switched to the Yak-3 in March 1943.

FIGHTER DETAILS



Yak-1 of Capt Boris Nikolaevich Eryomin, 296th IAP, Southwestern Front, Soviet Union, winter 1941–42

This fighter was delivered from the factory with skis and white camouflage. Ski-equipped Yak-1s that survived the winter were sent to rear maintenance bases in the spring for conversion to wheeled landing gear and repainting in regular camouflage. This was almost certainly the aircraft that Capt Boris Eryomin was flying in the famous 'battle of seven against 25' on 9 March 1942, when he led seven Yak-1s into combat against 18 Bf 109s and seven Ju 88s. The Soviet pilots later

claimed seven victories without loss.



Yak-7B of Snr Sgt Pavel Petrovich Karavai, 897th IAP, Southwest Front, Soviet Union, late December 1942

Karavai flew this aircraft between late October 1942 and February 1943, during which time he claimed 16 victories. By the end of the war he had completed 232 sorties. Officially, Karavai was credited with 16 individual and seven shared victories, but unofficially he scored 31 individual and seven shared kills. The inscription on the side reads *ishchu* ('I search'). The cost of building this fighter had been paid for by workers of Kolkhoz Vlasenko, a collective farm in the Saratov region of the southwestern USSR.

YAKOVLEV Yak-9

SPECIFICATIONS (Yak-9D)

Crew: Pilot

Length: 28ft 0.25in (8.55m)

Wingspan: 31ft 11.5in (9.74m)

Height: 9ft 10in (3.00m)

Empty: 5,100lb (2,313kg)

Max T/O: 6,988lb (3,170kg)

Max Speed: 374mph (602km/h)

Range: 870 miles (1,400km)

Powerplant: Klimov M-105PF-3

Output: 1,360hp (1,014kW)

Armament: One 20mm cannon in propeller hub and two 12.7mm machine guns in upper cowling; provision for 441lb (200kg) bomb load under wings

First Flight Date: late December 1942

The original Yak-9 appeared in frontline service in late 1942, the aircraft being a lightweight version of the Yak-7, which had been the Red Air Force's staple fighter since early 1942. By mid-1944, the Yak-9 outnumbered all other fighters in service on the Eastern Front, with a handful of variants fulfilling the long-range interception role, fighter-bomber tasks, nightfighting and close-support missions.

The second-generation Yak-9U/P had been developed in late 1942 when a standard airframe had its Klimov M-105PF engine replaced by the more powerful VK-107A (rated at 1,650hp) sourced from the same manufacturer. Aerodynamic improvements were also made to the overall fuselage, and plywood skinning replaced with light alloy. Designated the Yak-9U, and claimed by many Red Air Force pilots to be the best performing piston-engined Soviet fighter at high altitude, the new aircraft eventually reached frontline units in the final months of the war after its service entry was badly delayed by persistent engine

problems. Indeed, the first aircraft delivered by Yakovlev were fitted with M-105PFs.

Further development of the aircraft (producing both the D and T variants by May 1945) continued beyond VE Day, with the enhanced, cannon-armed, Yak-9P serving post-war not only with the Red Air Force but also with the air arms of a number of other communist bloc countries, including North Korea. Production finally ceased in 1947 after 3,900 Yak-9U/Ps (out of an overall total of 16,769 Yak-9s) had been delivered.

FIGHTER DETAILS



Yak-9 of Snr Lt Ivan Nikiforovich Stepanenko, 4th IAP, Bryansk, Soviet Union, July 1943

Snr Lt Stepanenko was allocated this aircraft in June 1943 and flew it until he received a Yak-9T – he would claim a number of his 41 victories in ‘white 17’. The Yak-9’s artwork, painted by his mechanic over the standard early-war black and green camouflage scheme, depicted a springing tiger attacking Nazi propaganda minister Joseph Goebbels, who is fleeing in terror with his microphone. This aircraft was flown by 44-victory ace Maj Il’ya Vasil’evich Shmelyov after Stepanenko had received his Yak-9T.



Yak-9U of Lt Boris Aleksandrovich Loginov, 29th GIAP, Karelian Front, Soviet Union, February 1945

Loginov joined the 29th GIAP in early 1943, and by war's end he had flown 172 sorties and fought in 36 air combats. He was officially credited with eight individual and six group victories, and gave away four more to his wingman. In early 1944 Leningrad's famed Vakhtangov Ballet contributed funds to buy four fighters, all of which were donated to the 29th GIAP and marked *VAKHTANGOVETS* in Cyrillic script on both sides of the fuselage.

YAKOVLEV Yak-3

SPECIFICATION (Yak-3)

Crew: Pilot

Length: 27ft 10.25in (8.49m)

Wingspan: 30ft 2.25in (9.20m)

Height: 7ft 11.25in (2.42m)

Empty: 4,641lb (2,105kg)

Max T/O: 5,864lb (2,660kg)

Max Speed: 407mph (655km/h)

Range: 559 miles (900km)

Powerplant: Klimov VK-105PF2

Output: 1,290hp (960kW)

Armament: One 20mm cannon in propeller hub and two 12.7mm machine guns in upper cowling

First Flight Date: 28 February 1943 (Yak-1M)

The second Yakovlev aircraft to be designated the Yak-3 (the first was abandoned in the autumn of 1941 due to poor engine reliability and a shortage of suitable building materials), this machine was built to fulfil a Red Air Force requirement for an agile fighter capable of achieving its maximum performance at low altitude. By meeting these criteria, the fighter allowed its pilots to secure air superiority immediately over the battlefield – something that the Luftwaffe had enjoyed for much of the war on the Eastern Front.

Utilizing a modified Yak-1M fitted with a smaller wing, the prototypes completed their service trials in October 1943, by which time a pre-series run of aircraft had been put into production at GAZ 286 at Kamensk Ural'ski. The Yak-3 was not officially cleared for full-scale production until June 1944, and the small number of regiments that rapidly re-equipped with the fighter soon proved the fighter's superiority over its Luftwaffe counterparts in a number of aerial engagements. Thanks to its unrivalled power-to-weight ratio (the Yak-3

was one of the smallest and lightest fighters to see action in the European theatre), the aircraft was so dominant in combat that the *Jagdwaaffe* ordered its fighter pilots to avoid intercepting any Yaks encountered below 16,400ft. Yet despite its light weight, the Yak-3 was both robust and simple to maintain in the frontline, making it popular with groundcrew. The fighter remained in production until August 1946, by which time 4,848 Yak-3s had been built.

FIGHTER DETAILS



Yak-3 of the 18th GIAP, Poland, early 1945

Although the bold lightning bolt was a marking more associated with Yak fighters of the French Normandie Regiment, it was also the formation insignia of the 303rd IAD. A variation was also worn by the 9th GIAP's La-7s. The more ornate style of number adorning this machine identifies it as an 18th GIAP fighter fighting with the unit in Poland, rather than a Normandie Yak-3.



Yak-3 of Snr Lt Ivan Vasil'evich Maslov, 157th IAP, Germany, 1945

This aircraft displays a nose inscription which reads *KOLKHOZ KRASNYI OKTYABR* ('Red October

Collective Farm'), thus denoting the source of the donations that paid for its construction. By the end of the war, Snr Lt Ivan Maslov had flown 350 sorties and scored 22 individual and 19 shared victories in 100 air combats. He had received the Hero of the Soviet Union on 1 July 1944 for his exploits.

In the compilation of this volume we used the previously published artwork by the following artists: Richard Caruana, Chris Davey, Robert Grudzien, Jim Laurier, Ronnie Olsthoorn, Grant Race, Mark Rolfe, SPM-Aero Co. Ltd, Chris Thomas, Tom Tullis and John Weal.

Profile artwork included in this volume was previously published in the following Osprey series: Aircraft of the Aces (ACE), Aviation Elite Units (AEU), Combat Aircraft (COM) and the General Aviation (GNA) series. Please note the page number refers to the artwork appearance in this edition.

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CONVERSION TABLE

1 millimetre (mm)	0.0394in
1 centimetre (cm)	0.3937in
1 metre (m)	1.0936 yards
1 kilometre (km)	0.6214 miles
1 kilogram (kg)	2.2046 lb

1 inch (in)	2.54cm
1 foot (ft)	0.3048m
1 yard	0.9144m
1 mile	1.609km